

UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

SCHLUMBERGER SOUNDING RESULTS NEAR TWIN FALLS, IDAHO

By

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INTRODUCTION

The U.S. Geological Survey has made 85 Schlumberger soundings near Twin Falls, Idaho since 1982. These soundings were made in support of the Water Resources Division Regional Aquifer-Systems Analysis study. The soundings were made to estimate the thickness of the basalt, which is the main aquifer in this area.

The surveyed area is mostly in the Snake River Plain and is composed primarily of Quaternary basalt. Interflow zones of cinders and rubble make for high porosity and high hydraulic conductivity (Whitehead and Lindholm, 1985). Tertiary aged Banbury Basalt of the Idaho Group (Covington, 1976) is exposed in the wall of the Snake River canyon and probably underlies the Quaternary basalt in the study area.

The purpose of this report is to release the observed Schlumberger sounding data. An automatic interpretation of the soundings is also given.

SCHLUMBERGER SOUNDINGS

Figure 1 is a map showing the location and identifying number of the 85 Schlumberger soundings. The soundings are labeled 1 thru 59 and 101 thru 126. The soundings were automatically processed and interpreted as a series of horizontal layers using a computer program written by Zohdy (1973). Some soundings were distorted due to the effects of cultural conditions such as metal fences, grounded powerlines, and buried telephone cables. When possible the distorted soundings were smoothed to give a sounding that could be interpreted. Some soundings were too distorted to smooth. The individual sounding interpretations are given in the appendix. For each sounding the data in the appendix include:

- 1) A log-log plot of the field data points where the "0"'s represent the individual data points. Data points measured with the same potential electrode spacing are connected with a solid line. The current electrode half spacings ($AB/2$), which were measured in feet, have been converted to meters.
- 2) A tabulation of the $AB/2$ spacings in meters and the corresponding apparent resistivities in ohm-m.

- 3) A log-log plot of the output of the automatic inversion program in which:
- The continuous curve represents the shifted-digitized field curve obtained by shifting the segments of the field curve to produce a continuous curve and digitizing the shifted-curve at the rate of six points per log-cycle.
 - The step-function curve represents the distribution of interpreted resistivity with depth (interpreted model).
 - The plus (+) symbols represent points on a theoretical curve calculated from the interpreted model. These data are plotted to show how well the model represents the shifted-digitized data.
- 4) A tabulation of the interpreted depths in meters and the interpreted resistivities in ohm-m. The last layer depth is an arbitrarily large number and is intended to represent an infinite depth.

Soundings that were manually smoothed are indicated by a "-S" appended to the title on the plot of the interpretation (item 3 above). Although sounding 10 was affected by a metal fence, the data show none of the symptoms of cultural problems, in fact the sounding looks good. The only indication that something is wrong is that this sounding indicates a different resistivity section than that indicated by nearby soundings. To verify that the curve was distorted, sounding 11 was made about 400 m to the south, away from any possible cultural influences. The two soundings are similar to an AB/2 spacing of about 180 m, then sounding 10 starts to rise, indicating a more resistive structure, while sounding 11 is descending slightly, indicating a somewhat more conductive structure.

The USGS drilled a test hole near soundings 47 and 16 to verify the interpretation of the Schlumberger sounding data and to make various hydraulic tests (Whitehead and Lindholm, 1985). The automatic interpretation of sounding 47 and the lithologic interpretation from the test well have similar features but depths from the sounding interpretation are deeper. Depths from the lithologic interpretation were used with a guess and reguess interpretation scheme in order to develop a resistivity model that would fit the lithologic model observed in the test well as well as the original sounding data. Figure 2 shows the original resistivity model, the resistivity model using the test well depths and the lithologic model. A sounding curve calculated from the resistivity model that used the test well depths, fits the sounding data as accurately as the original resistivity model. The 2 resistivity models are an example of equivalence (Zohdy and others, 1974, Bisdorf, 1985).

SUMMARY

Although the interpretation of sounding 47 resulted in depths deeper than those observed in the test well, the sounding did detect

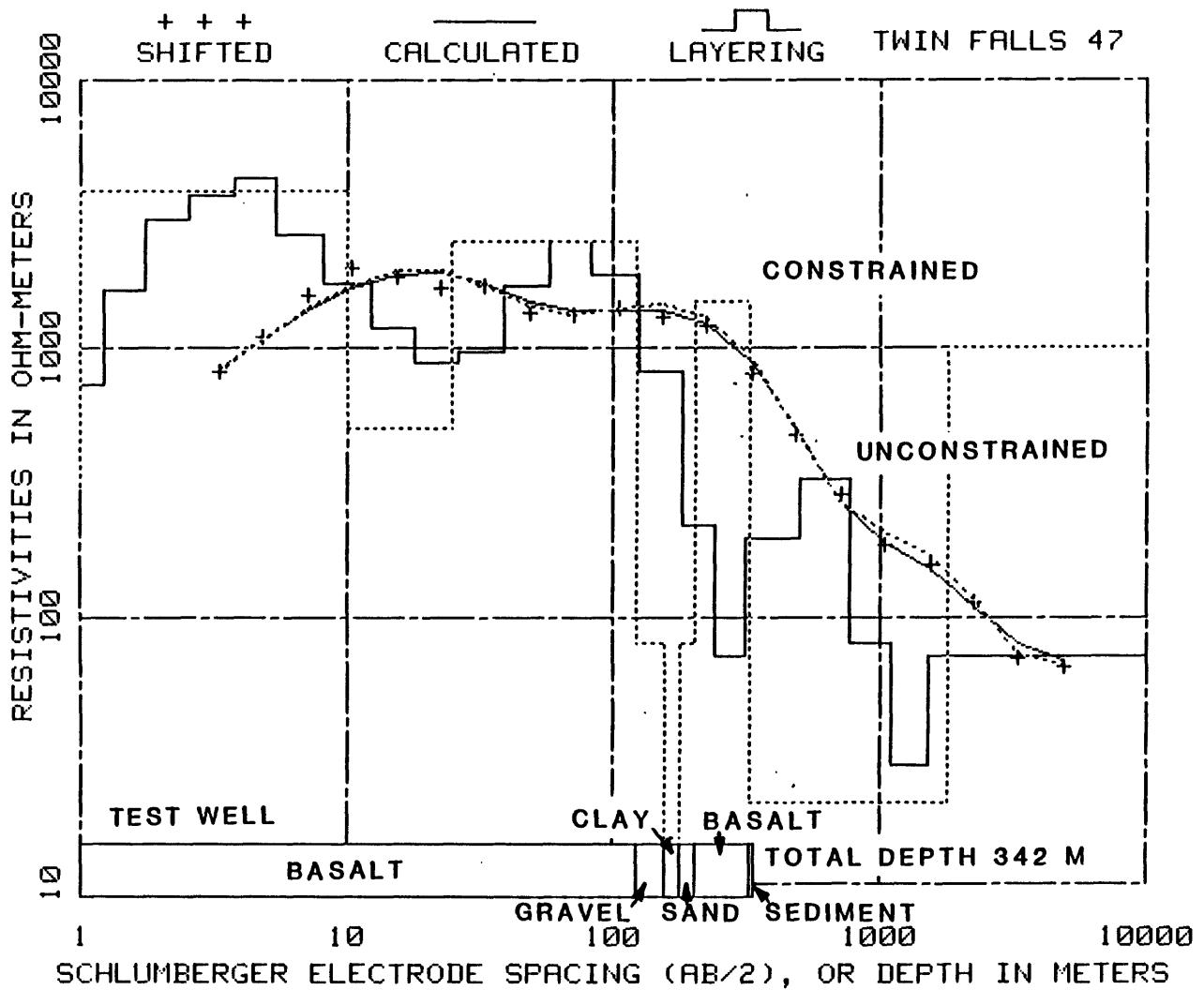


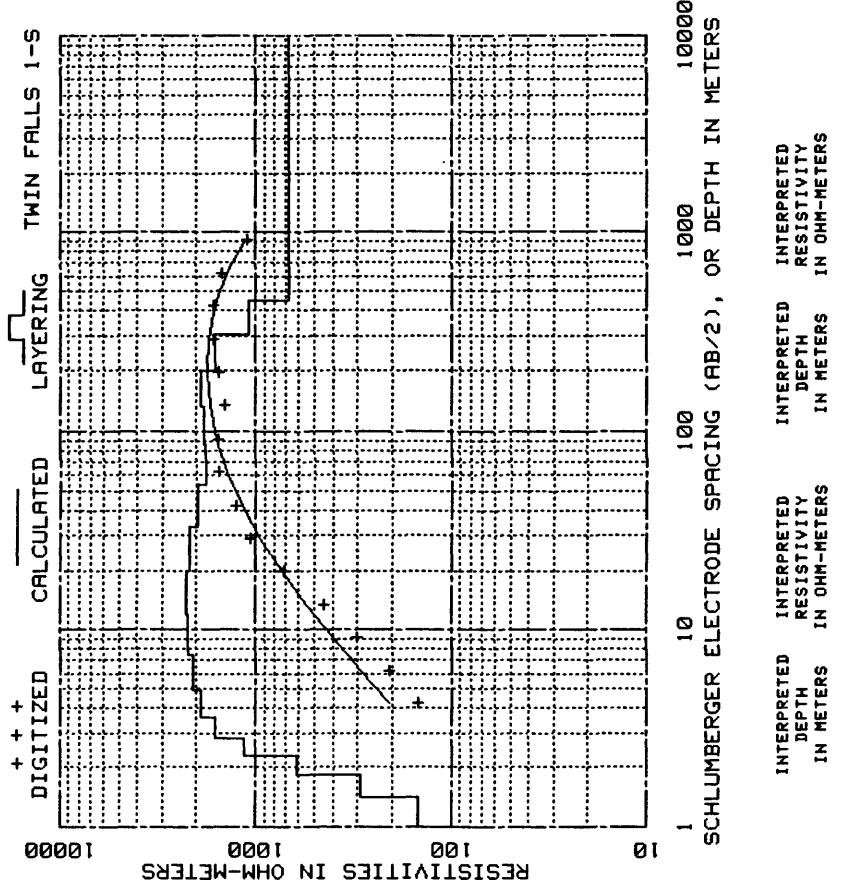
Figure 2. Plot of sounding 47. The plus signs represent the digitized points, and the solid lines represent the results of the automatic interpretation. The dashed lines represent a model that matches the depths as seen on the test well, and the strip at the bottom of the plot represents the lithologic model from the test well.

the presence of a low resistivity layer beneath the surface basalt. Using the results of the test well and a different interpretation scheme it will be possible to generate more accurate resistivity models for the other soundings.

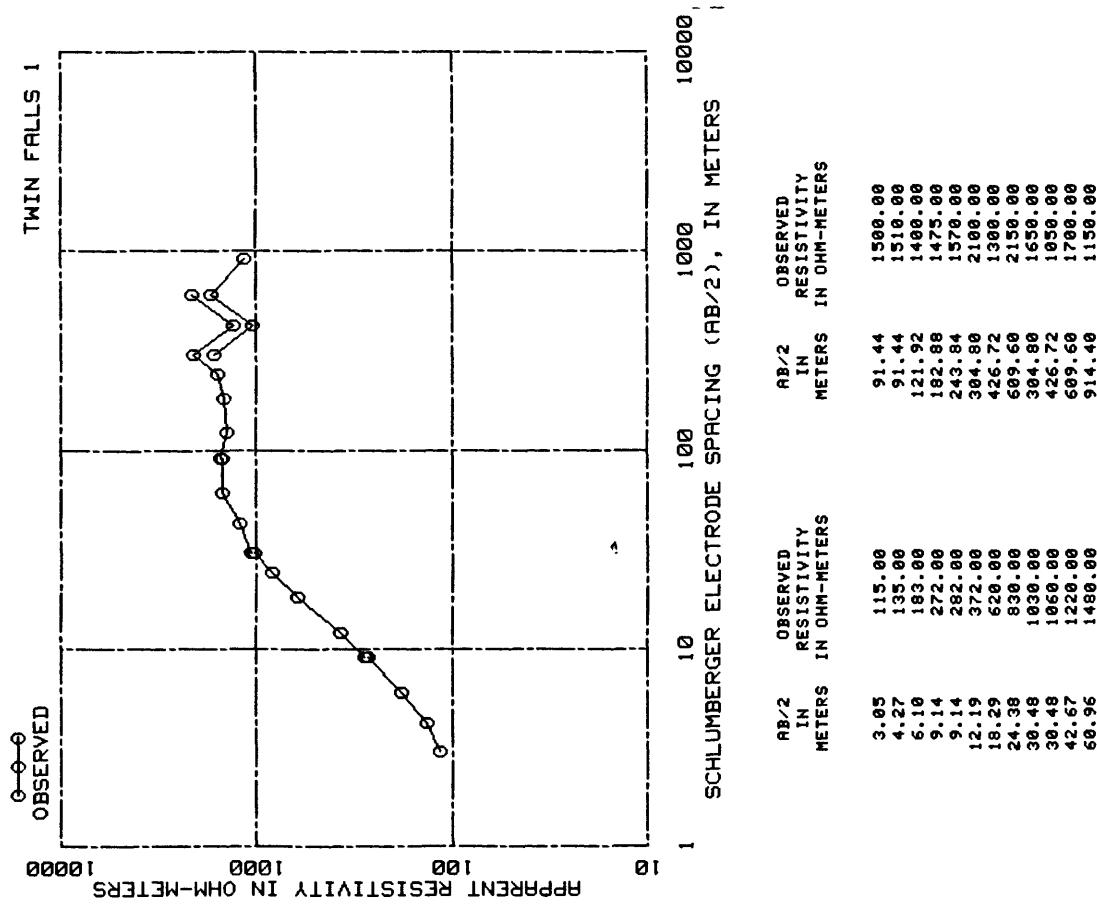
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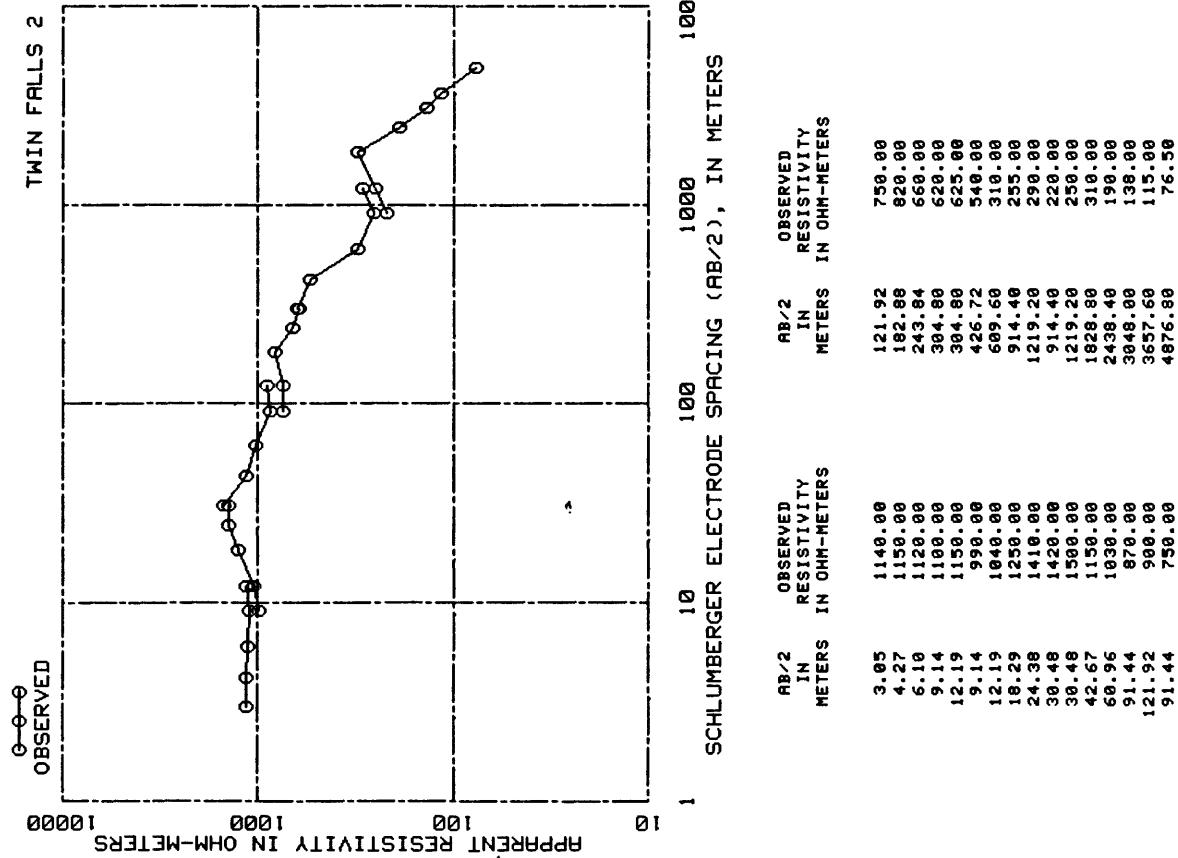
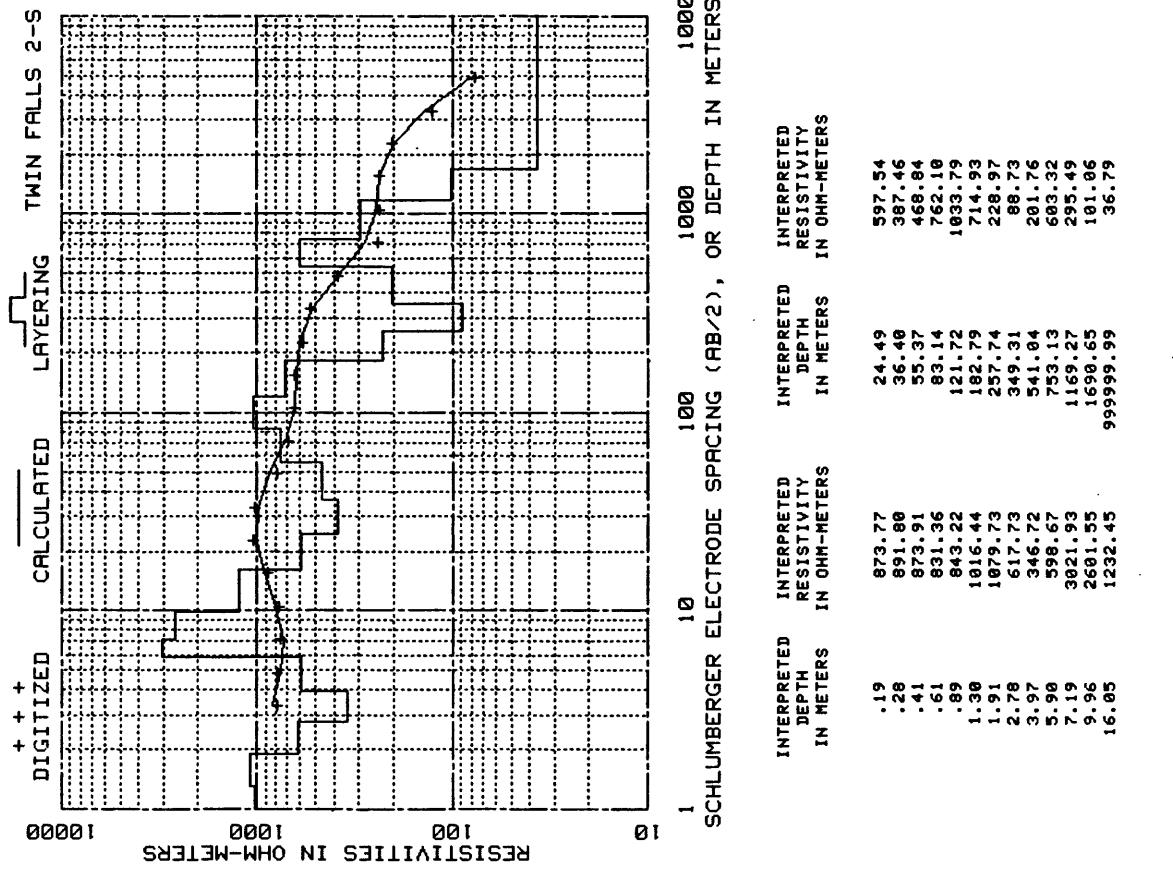
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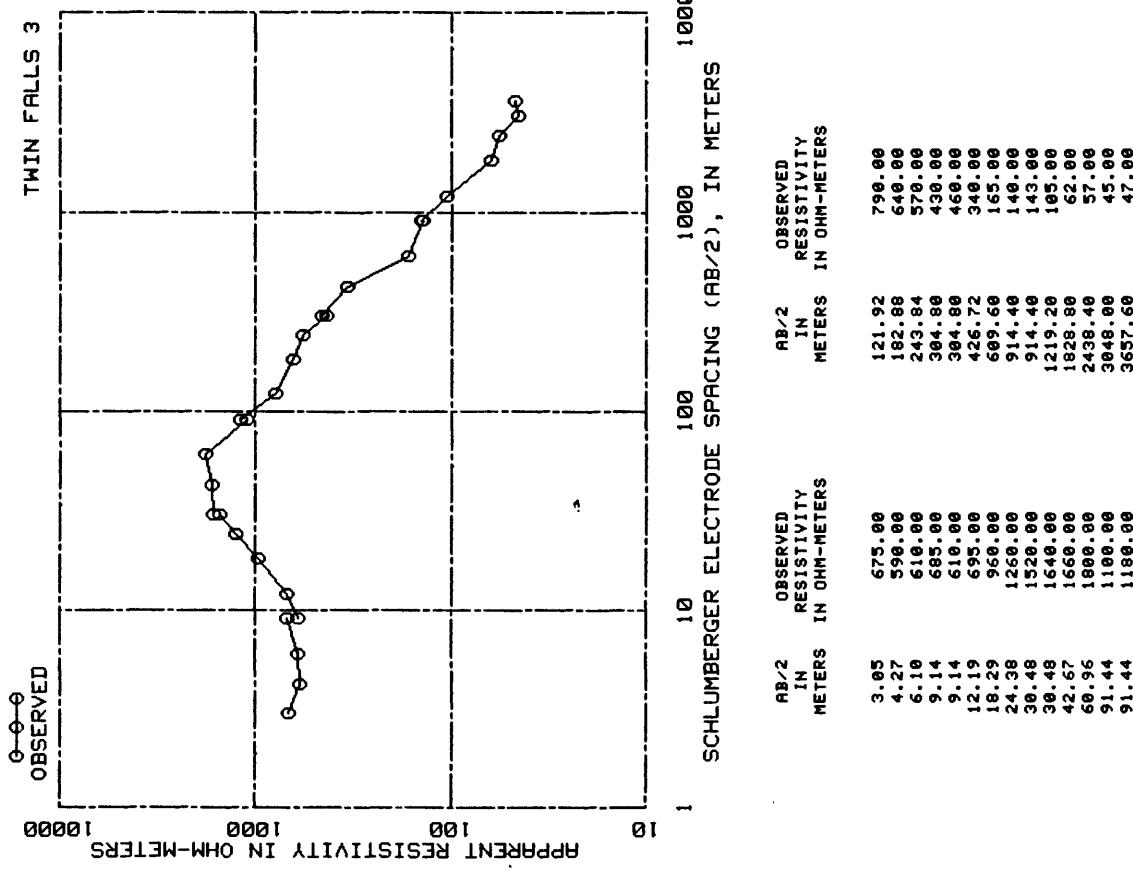
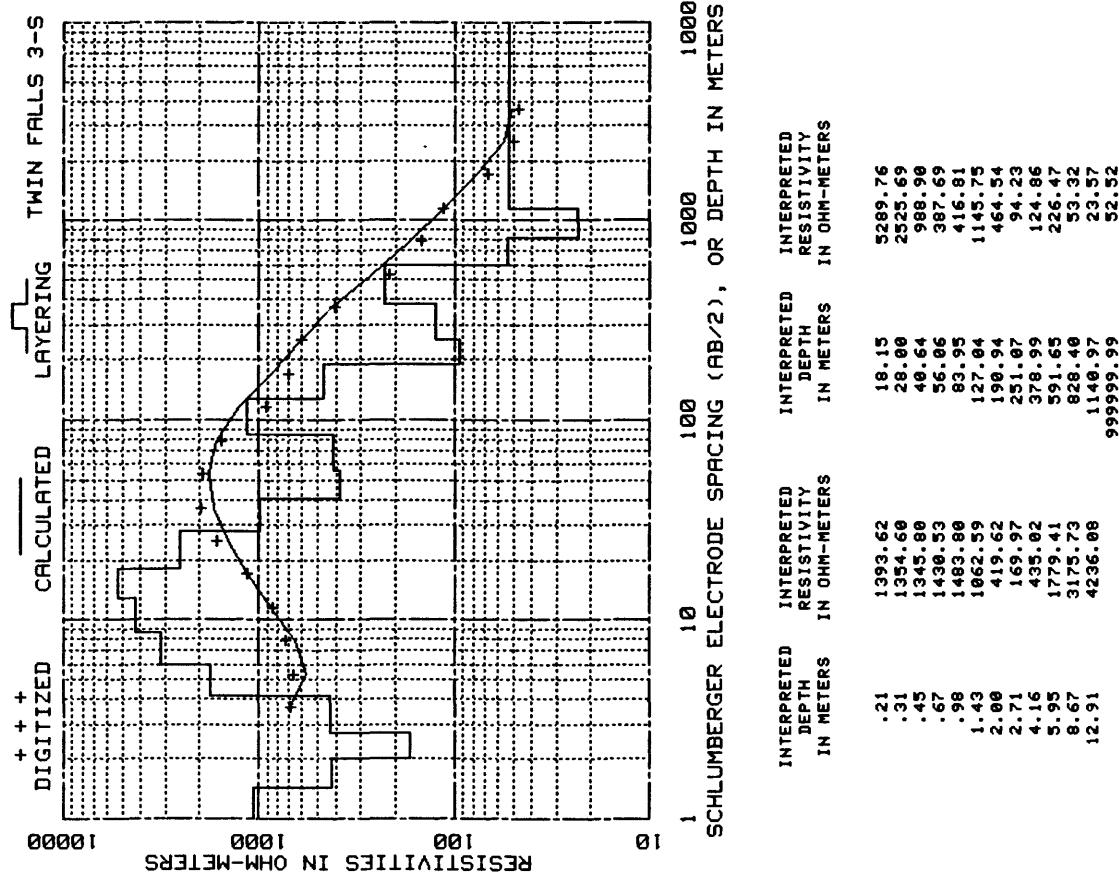
APPENDIX

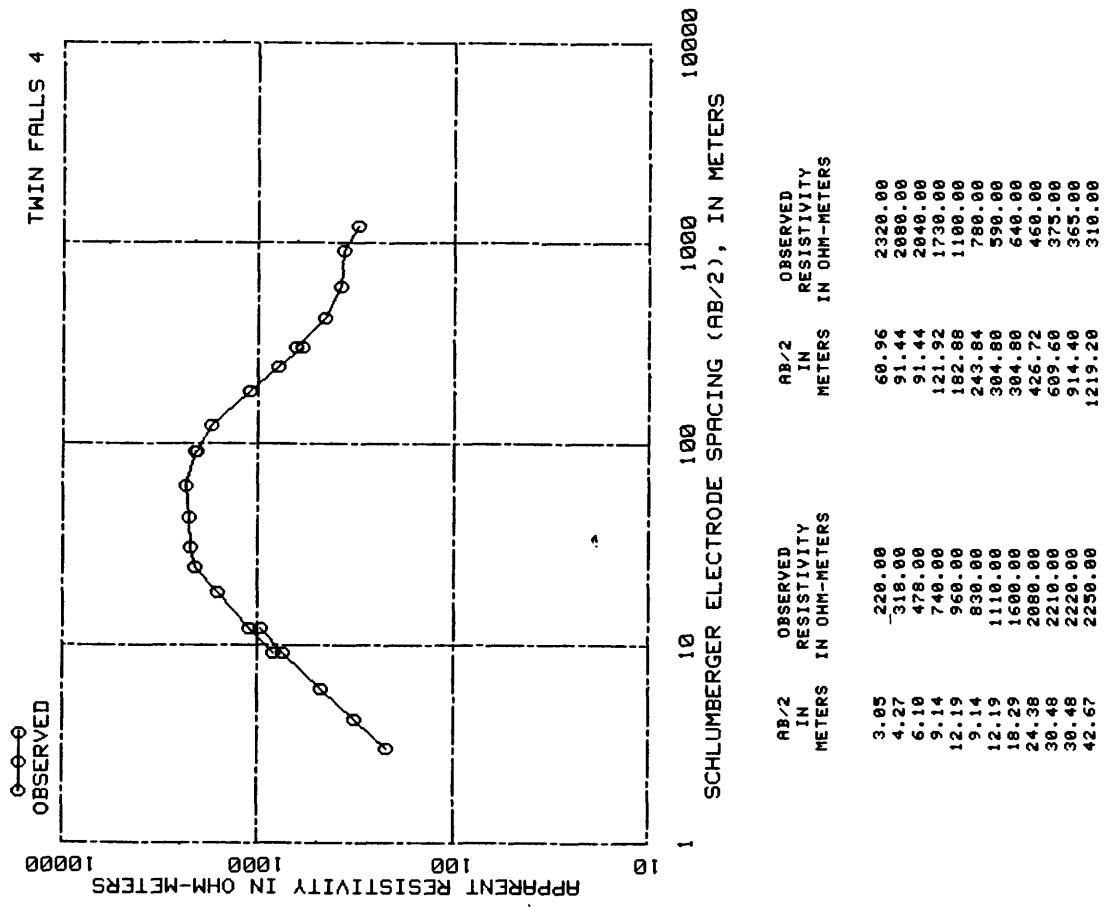
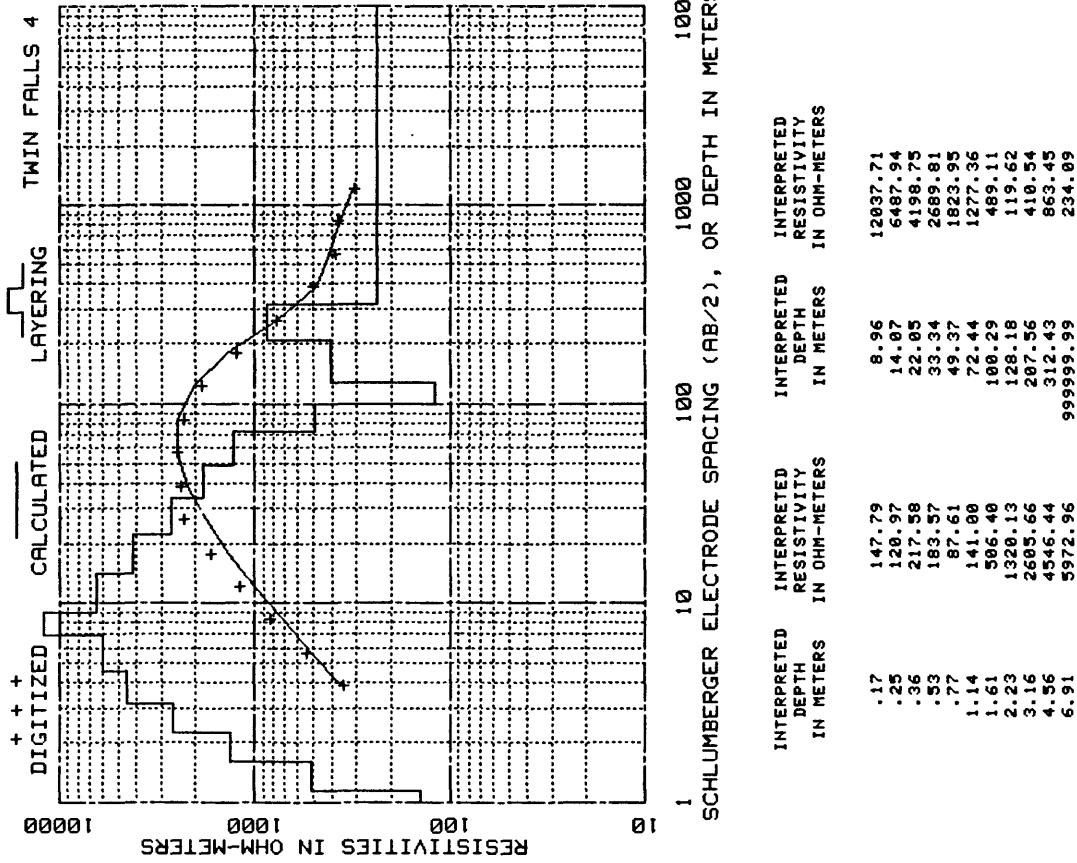


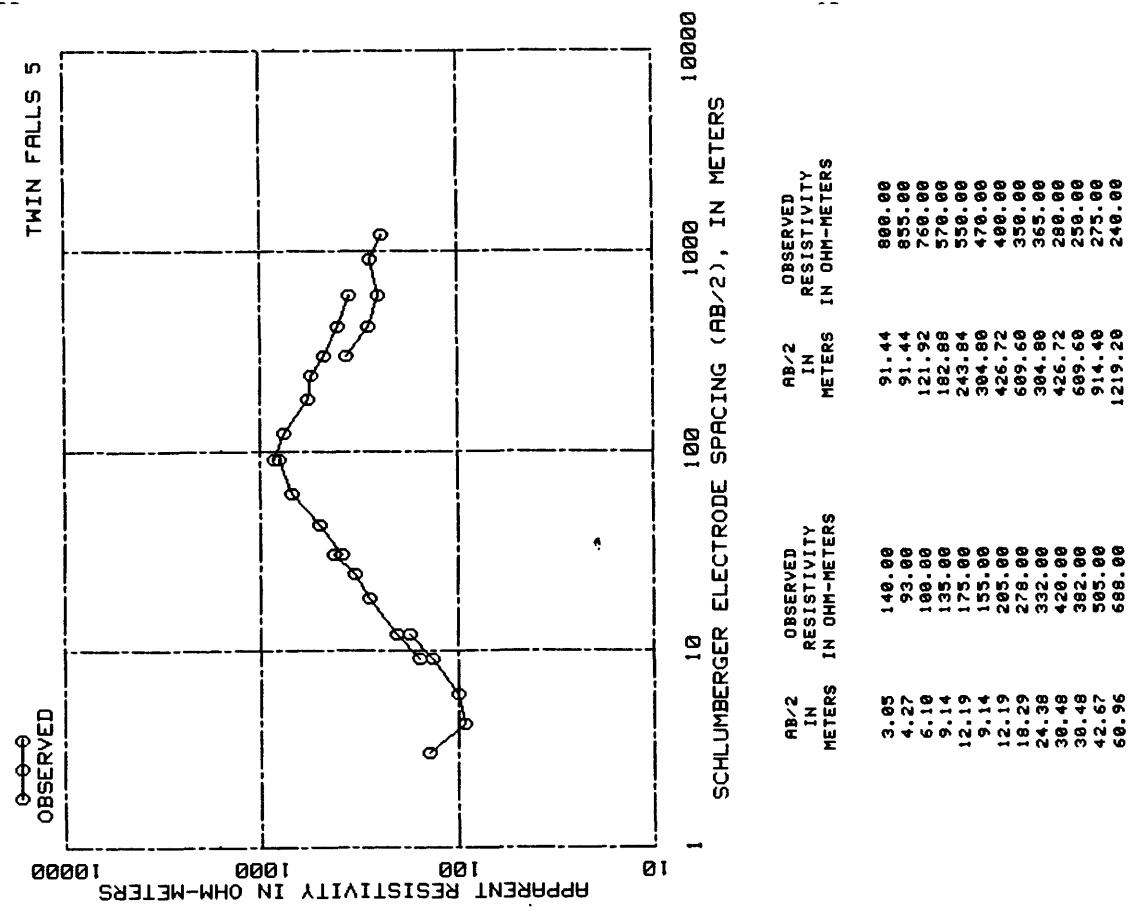
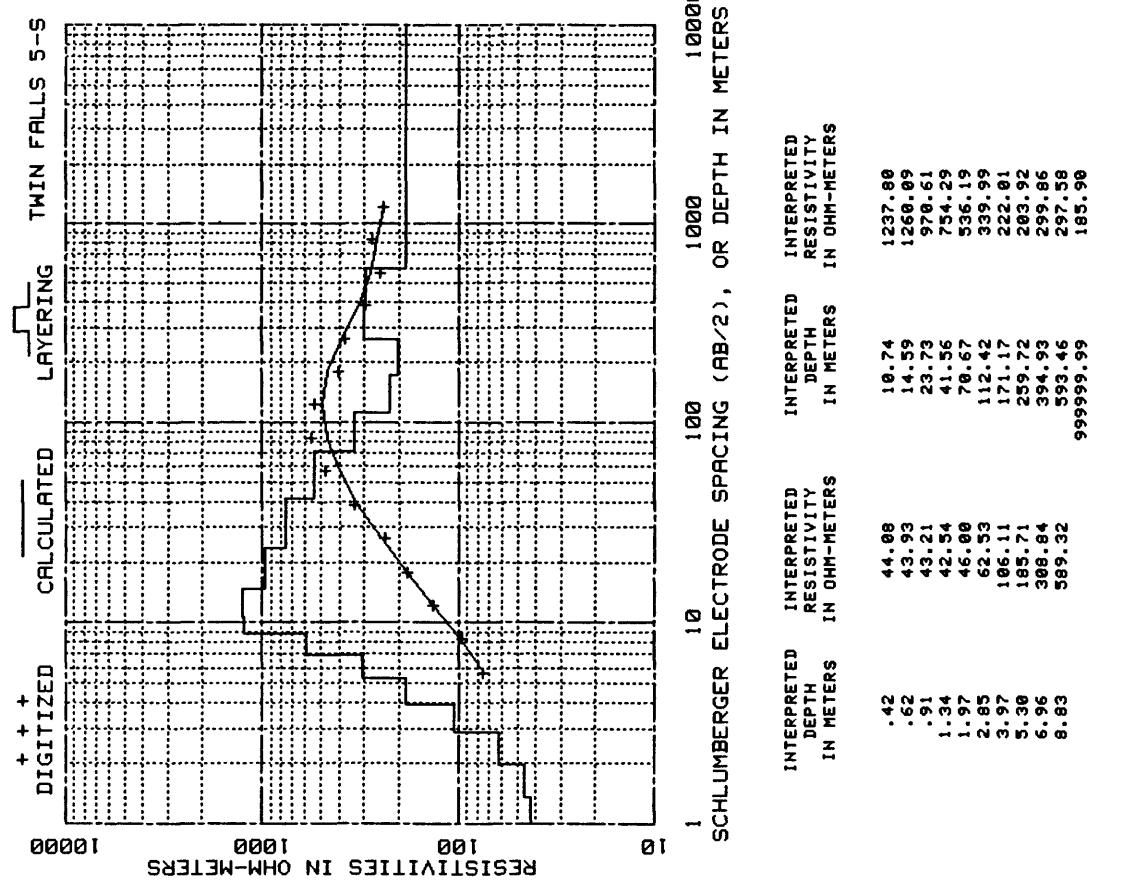
SCHLUMBERGER ELECTRODE SPACING (AB/2), OR DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
1	.32	62.53	7.44
10	.47	65.69	11.88
100	.68	72.91	19.69
1000	.99	93.19	32.88
10000	1.39	148.19	53.94
	292.43	197.36	
	1.84	181.11	
	2.29	183.96	
	621.15	132.71	
	1140.52	201.56	
	2.82	189.25	
	3.69	1602.19	
	4.97	382.85	
	1893.69	447.44	
		1875.25	
		680.91	
		99999.99	

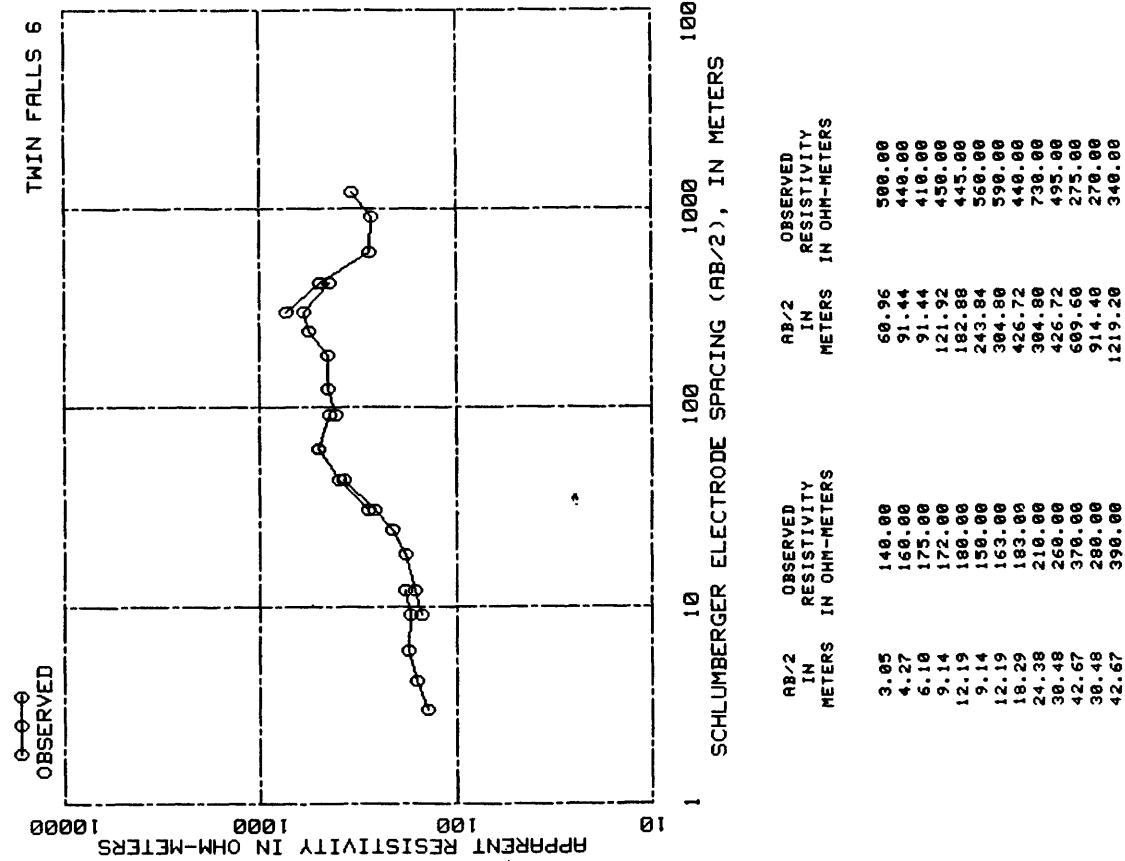
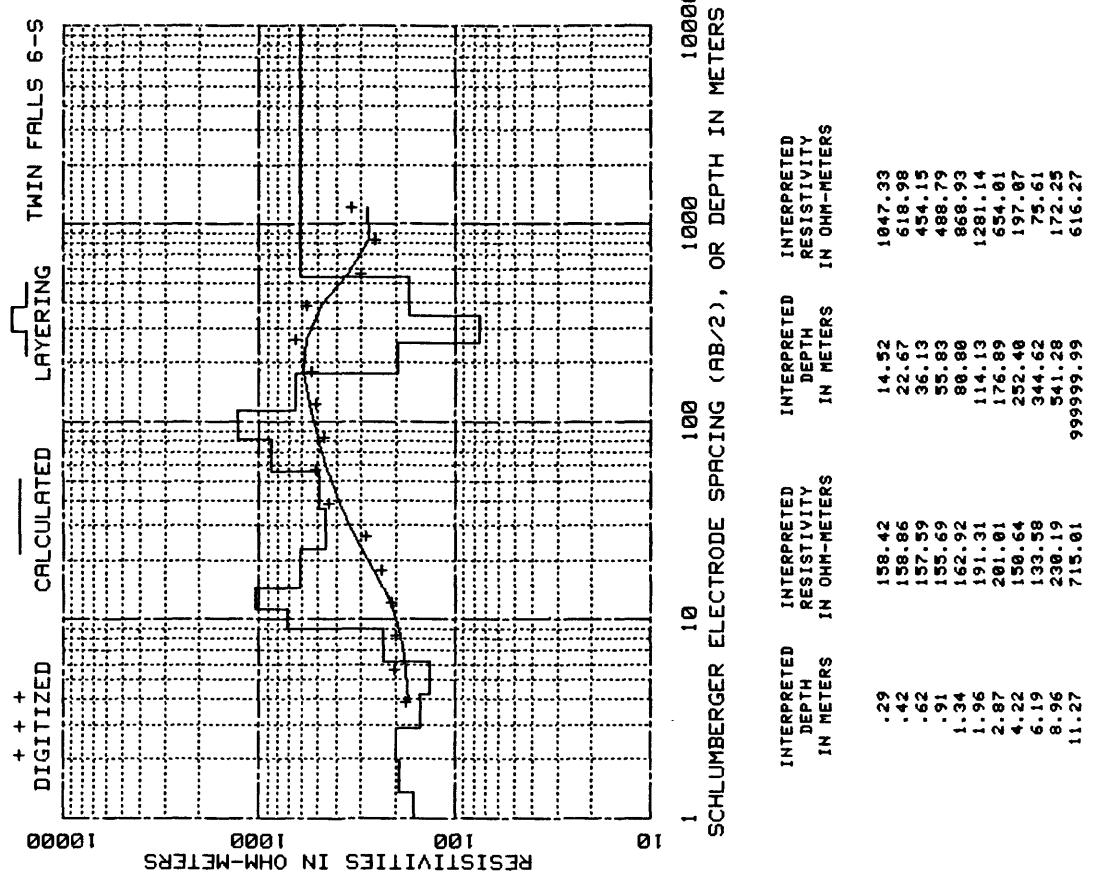


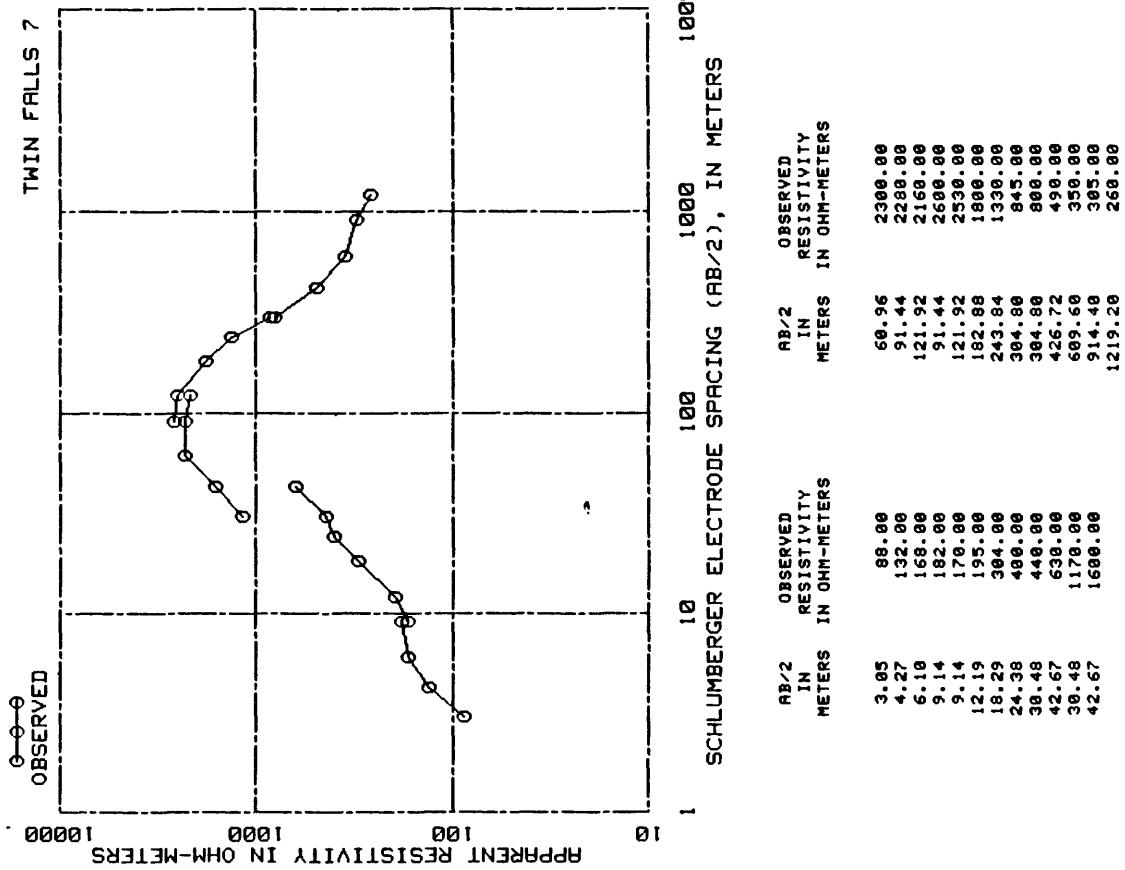
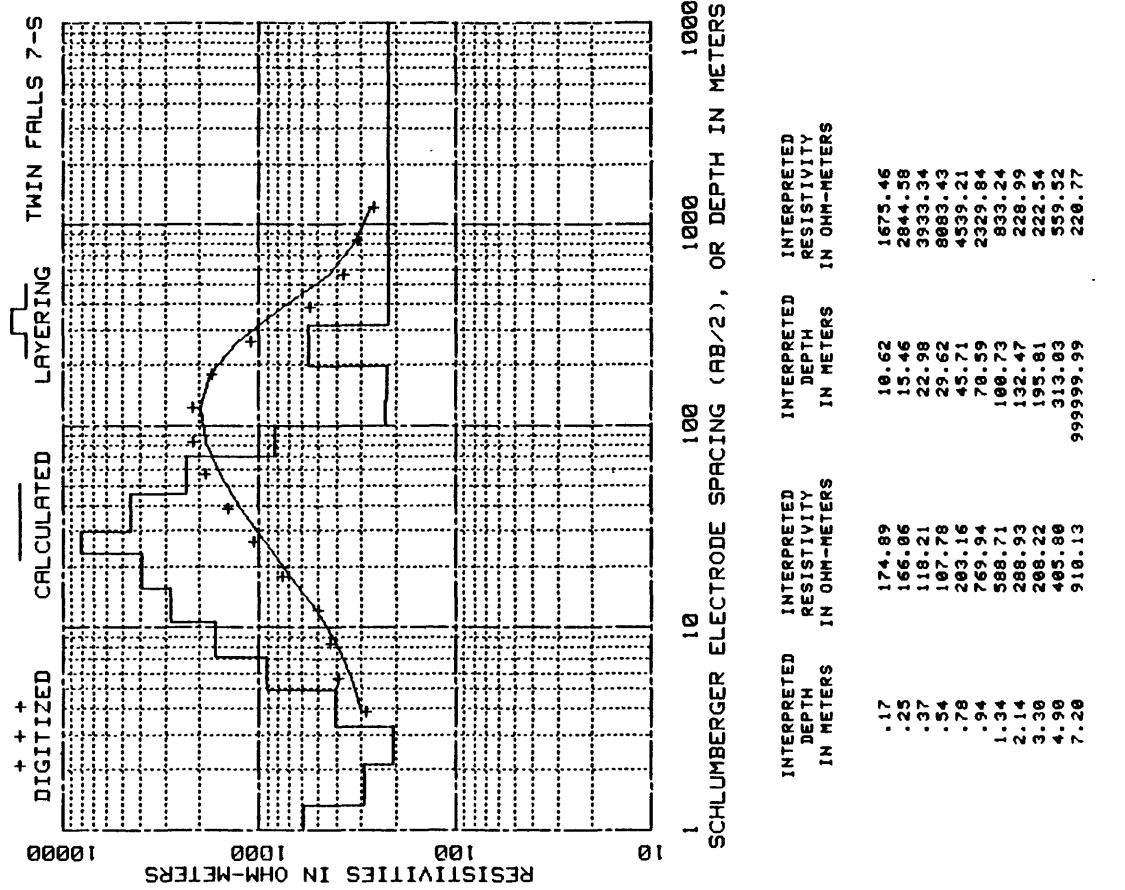


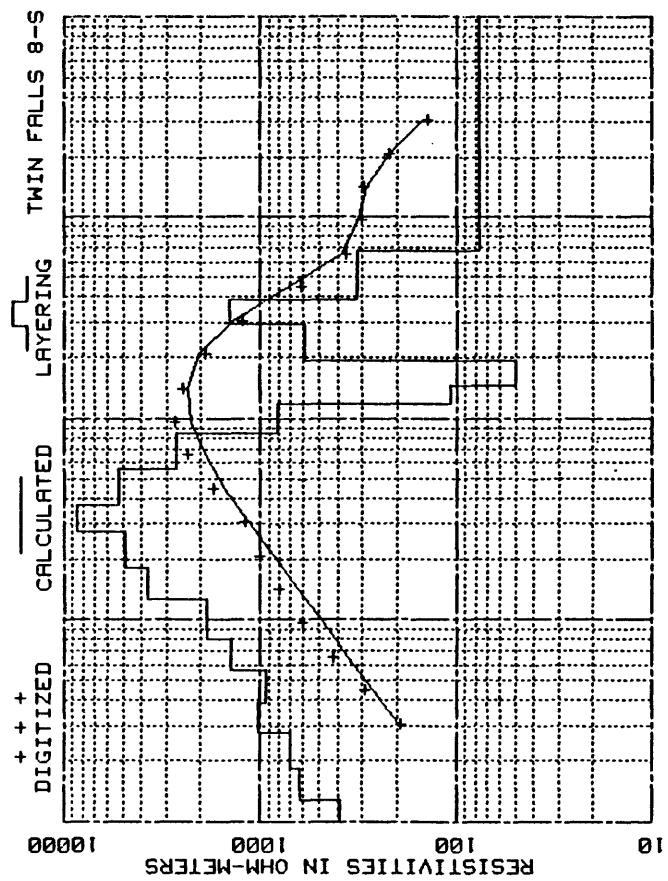






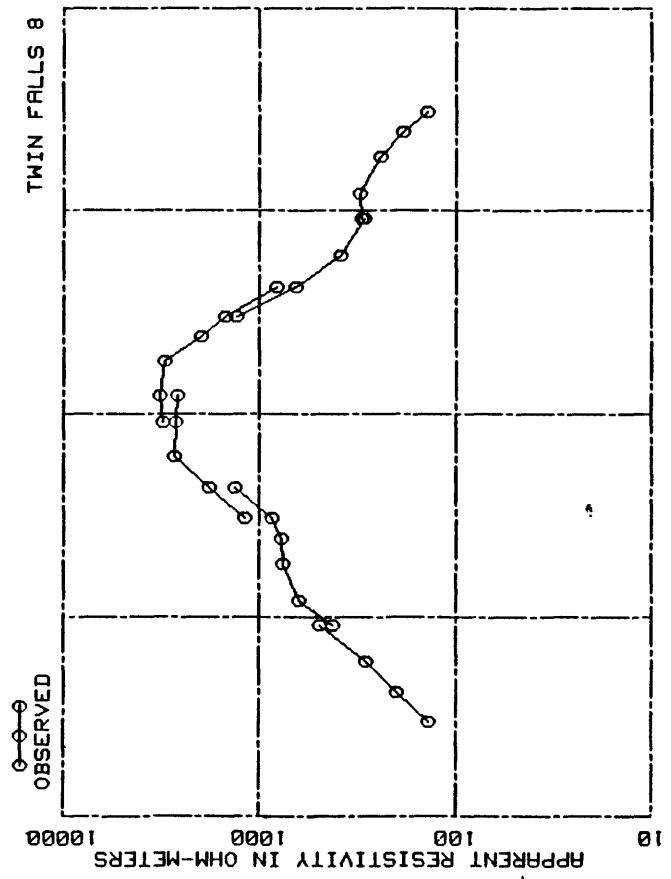




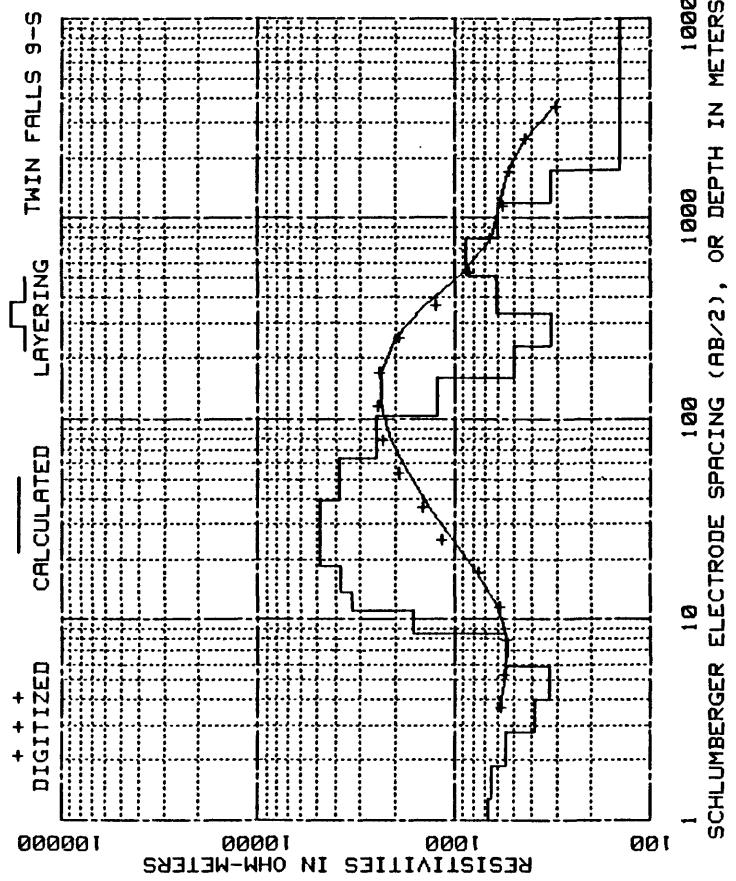


10000
1000
100
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1 SCHLUMBERGER ELECTRODE SPACING (AB/2), OR DEPTH IN METERS

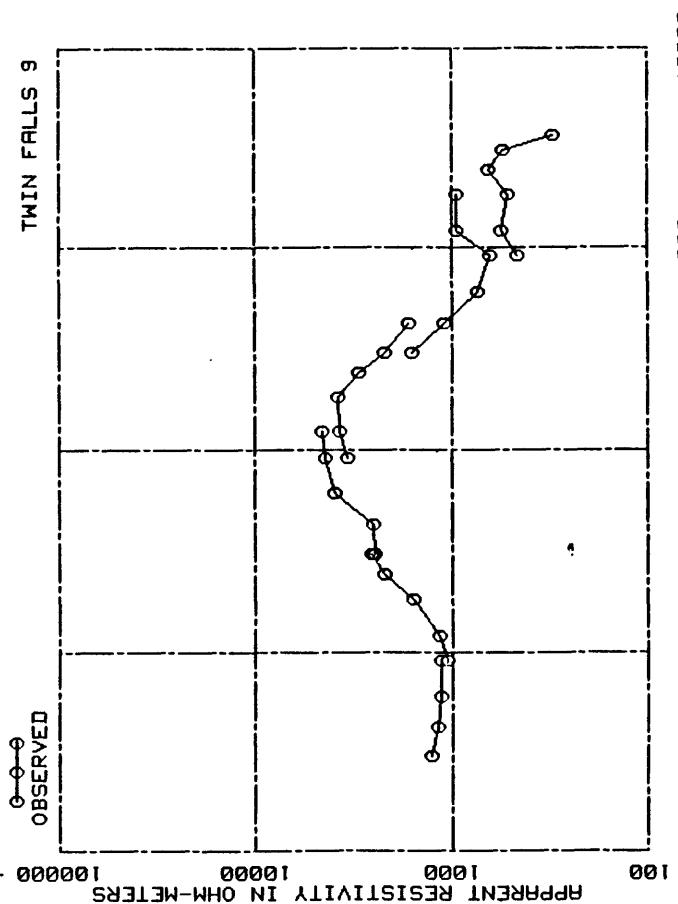
	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS
	.14	67.17	12.59	1877.84
	.20	97.36	18.24	3749.05
	.29	65.08	27.41	4918.37
	.42	42.19	36.59	8518.03
	.62	68.11	55.81	5285.79
	.90	180.85	84.51	2661.16
	1.27	389.02	118.61	819.35
	1.93	623.58	145.67	196.67
	2.78	787.98	194.69	58.06
	3.85	1828.57	294.67	592.51
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	8.07	1399.38	678.48	319.17
				76.64
				999999.99



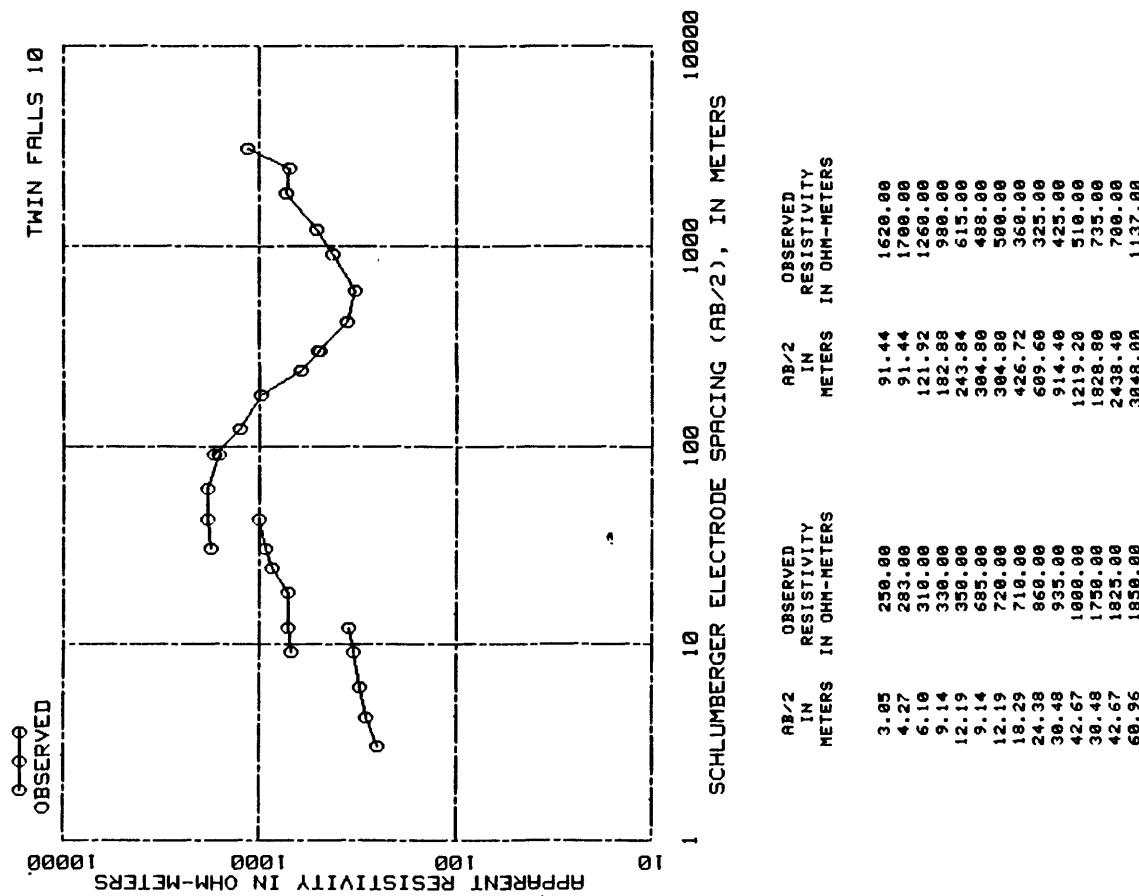
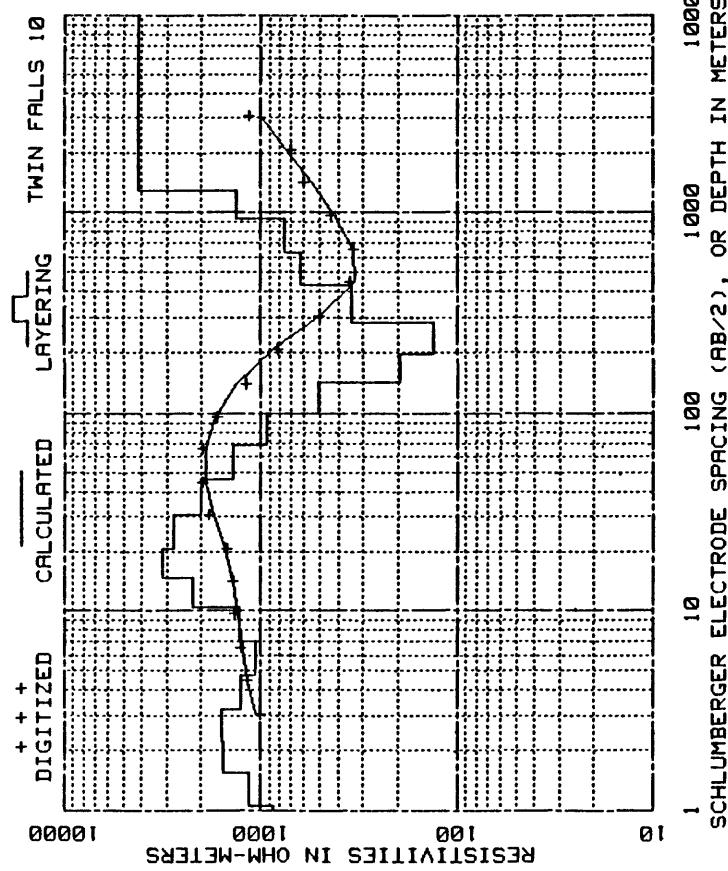
AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS	AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS
3.85	138.00	91.44	3120.00
4.27	198.00	121.92	3260.00
6.10	285.00	182.88	3050.00
9.14	490.00	243.84	1990.00
9.14	420.00	304.80	1500.00
12.19	625.00	426.72	820.00
18.29	765.00	394.80	1300.00
24.38	770.00	426.72	650.00
38.48	860.00	609.60	380.00
42.67	1340.00	914.40	290.00
38.48	1180.00	914.40	380.00
42.67	1800.00	1219.20	310.00
69.96	2700.00	1828.80	243.00
91.44	2660.00	2438.40	180.00
121.92	2600.00	3048.00	140.00

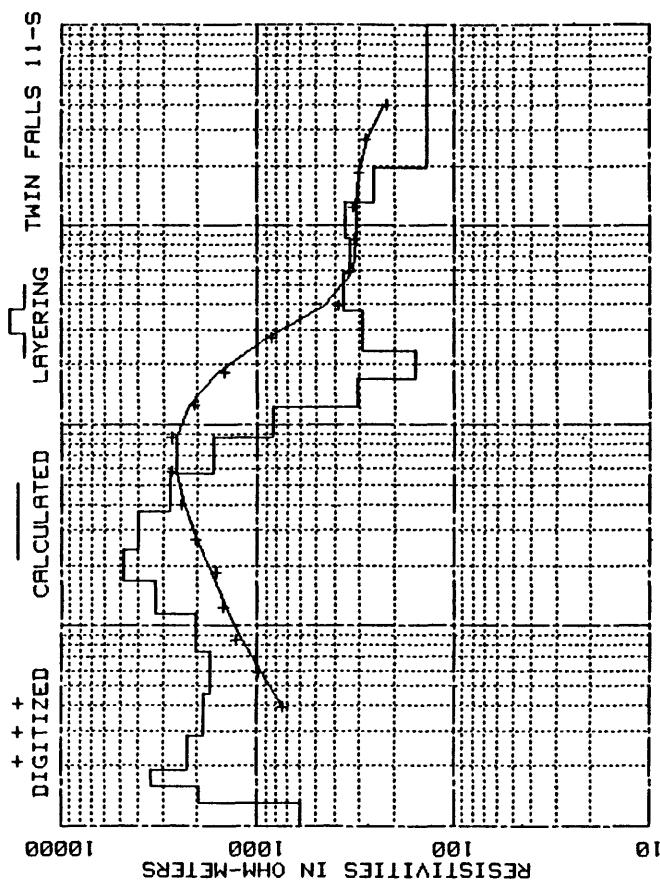


	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
.27	651.68	18.34	3793.67	
.48	649.56	25.59	4833.38	
.59	650.89	38.96	4833.28	
.87	656.98	64.13	3898.53	
1.27	665.94	104.68	2598.08	
1.87	646.18	159.85	1227.93	
2.74	542.23	227.83		
3.99	389.33	319.46		
5.81	328.69	517.62		
8.54	549.47	687.49		
11.83	1637.52	877.94		
13.71	3298.25	1191.63		
		595.61		
		320.92		
		1742.06		
		99999.99		



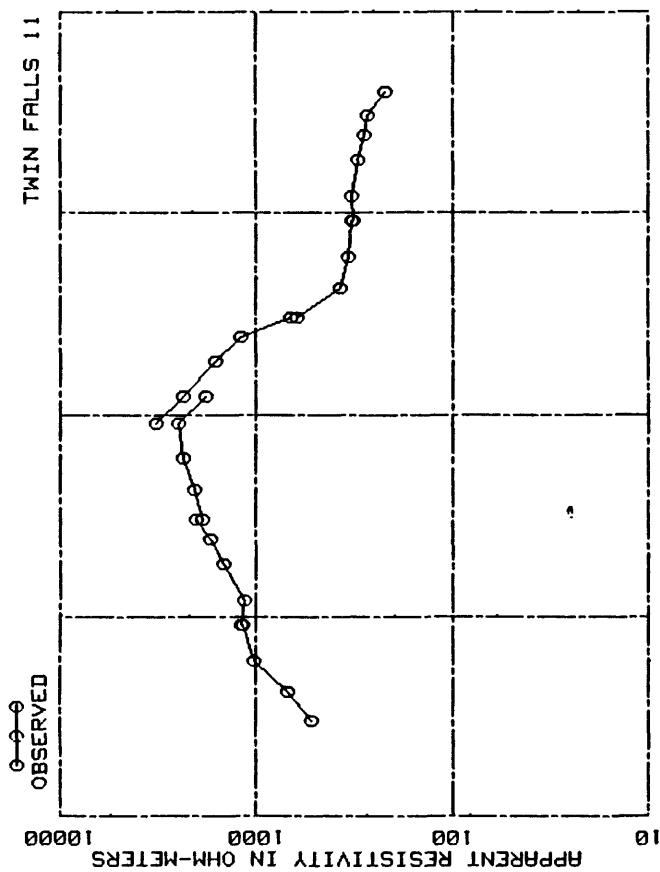
AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS	AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS
3.85	1260.00	182.00	3750.00
4.27	1180.00	243.84	2950.00
6.18	1142.00	384.96	2200.00
9.14	1140.00	426.72	1640.00
9.14	1060.00	384.96	1600.00
12.19	1160.00	426.72	1100.00
18.29	1560.00	689.60	740.00
24.38	2200.00	914.40	630.00
30.48	2560.00	1219.20	940.00
30.48	2440.00	1828.80	945.00
42.67	2580.00	914.40	468.00
60.96	3900.00	1219.20	560.00
91.44	4400.00	1828.80	520.00
121.92	4580.00	2430.40	640.00
91.44	3400.00	3018.00	550.00
121.92	3700.00	3657.60	395.00





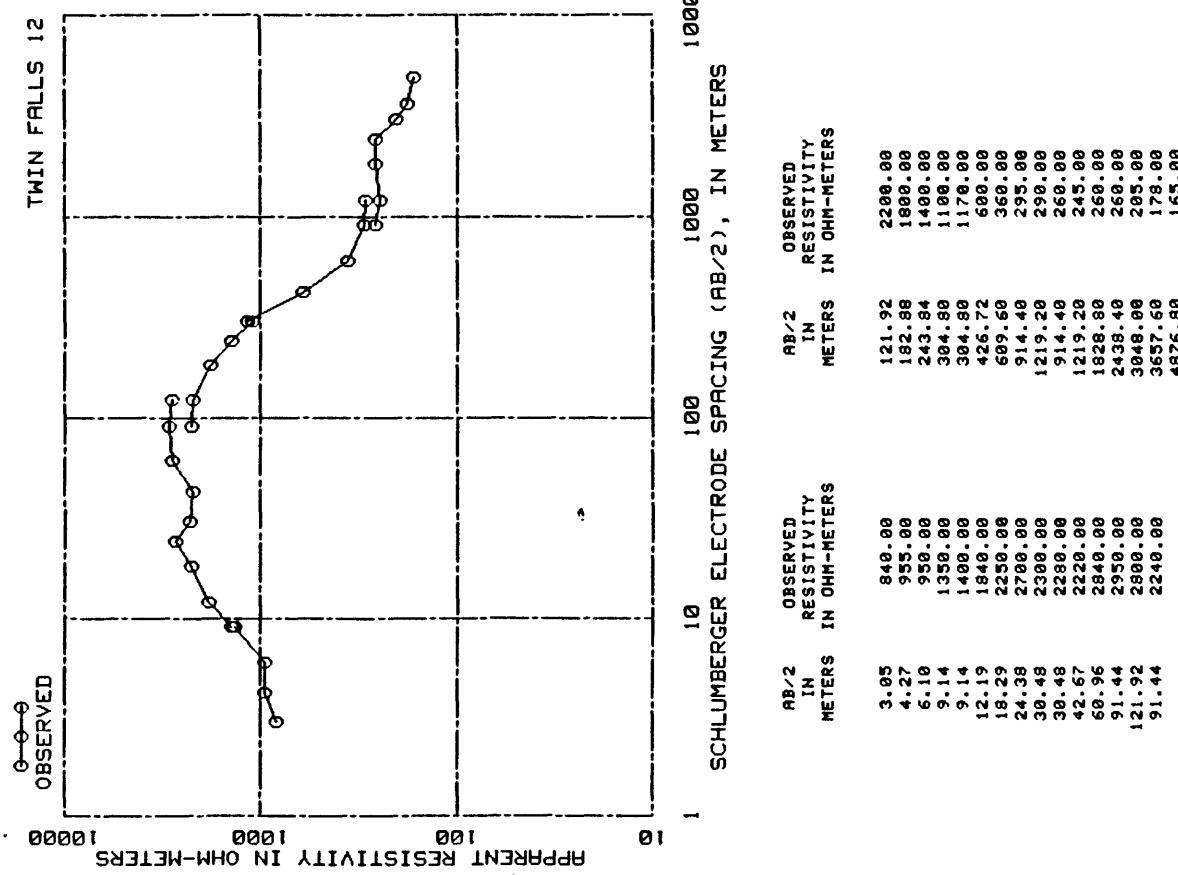
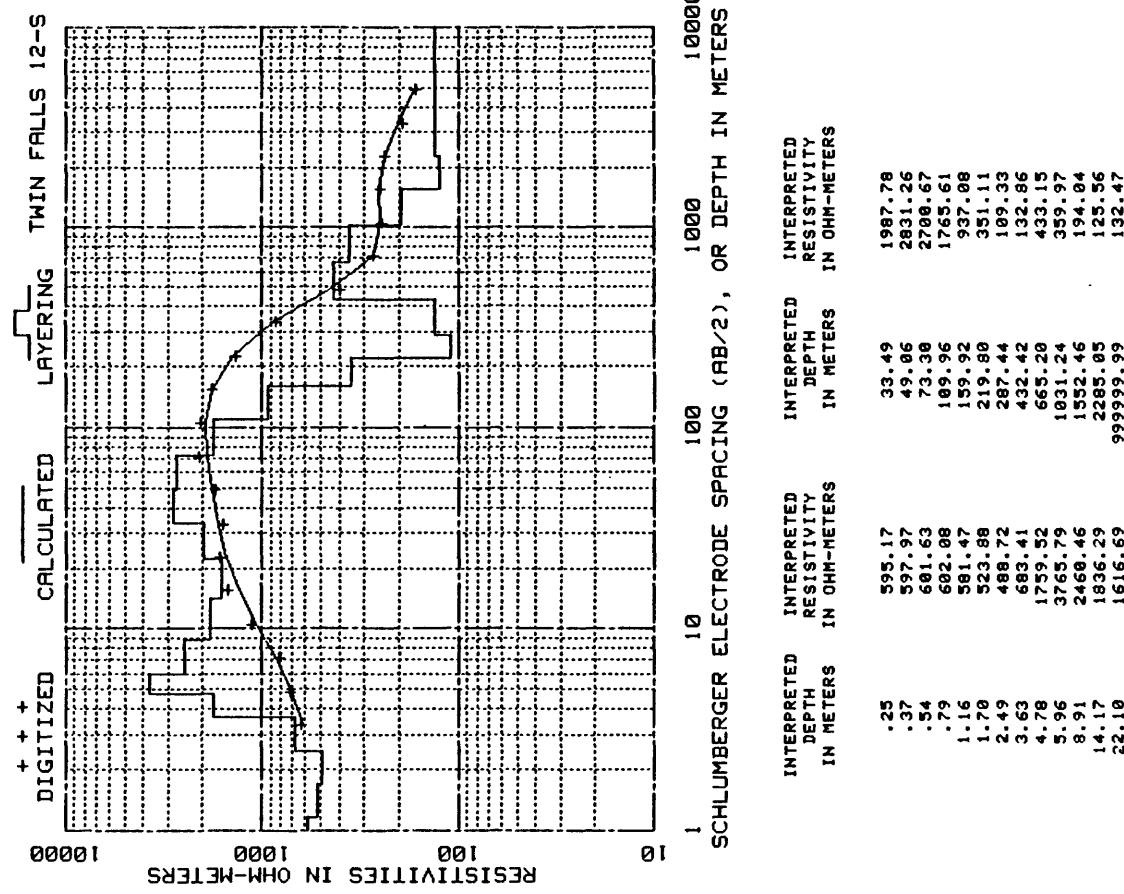
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SCHLUMBERGER ELECTRODE SPACING (AB/2), OR DEPTH IN METERS

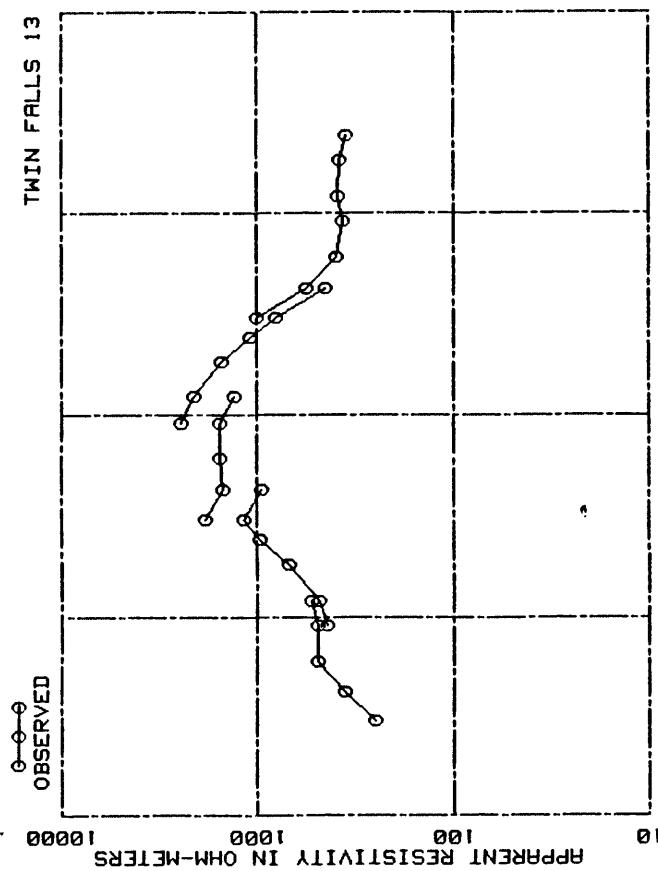
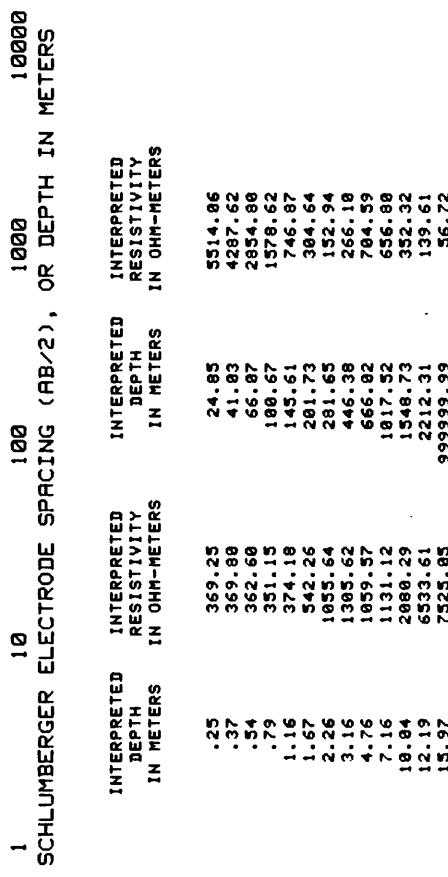
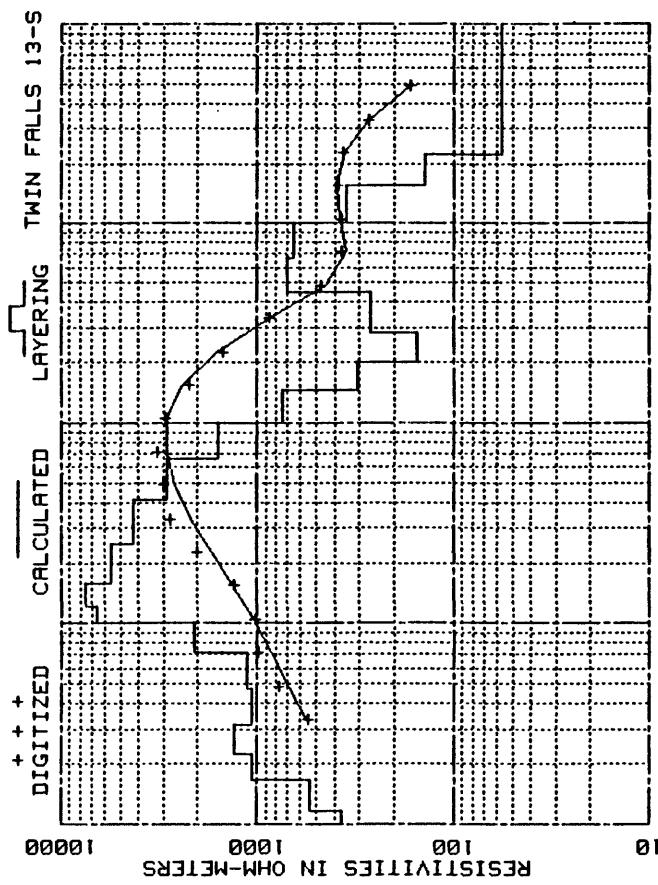
	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED RESISTIVITY IN OHM-METERS
			4768.97
	.38	279.53	23.96
	.44	261.43	36.67
	.64	262.53	4065.75
	.97	322.58	2775.44
	.94	322.58	85.93
		681.33	1676.82
	1.38	124.09	839.63
	1.57	1989.94	398.97
	1.89	3478.37	157.53
	2.81	2233.72	288.72
		369.66	364.69
	4.58	573.52	1854.29
	7.42	1731.59	872.28
	11.54	2058.78	349.53
	1311.85		
		3289.53	1941.24
	16.32		253.42
			99999.99
			136.81



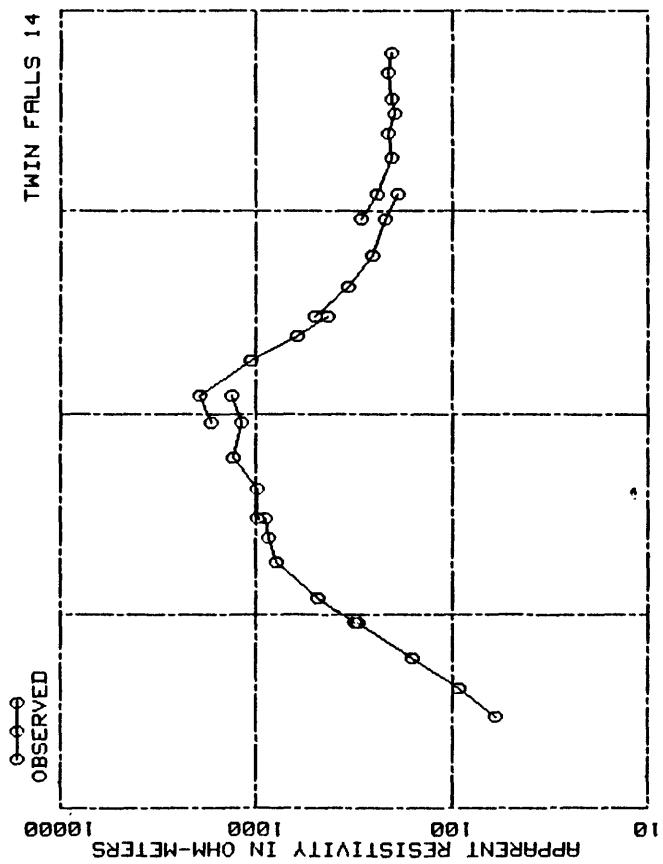
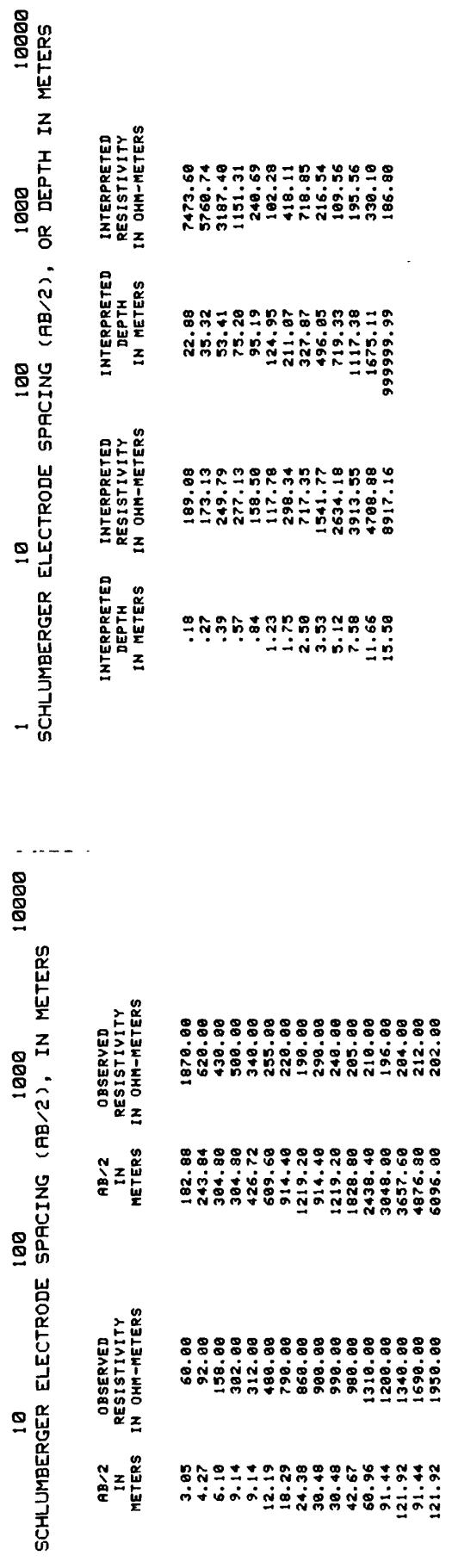
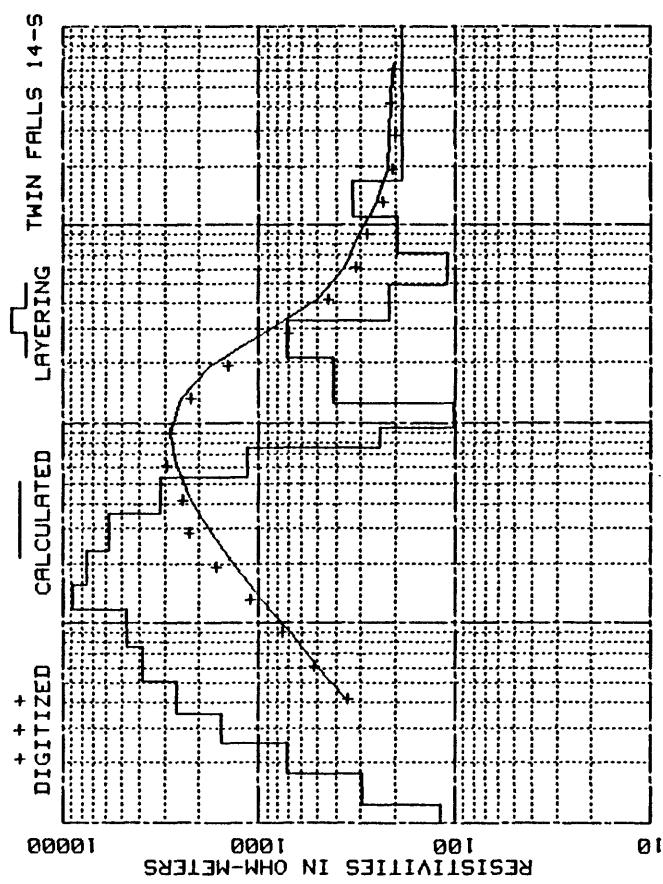
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SCHLUMBERGER ELECTRODE SPACING (AB/2), IN METERS

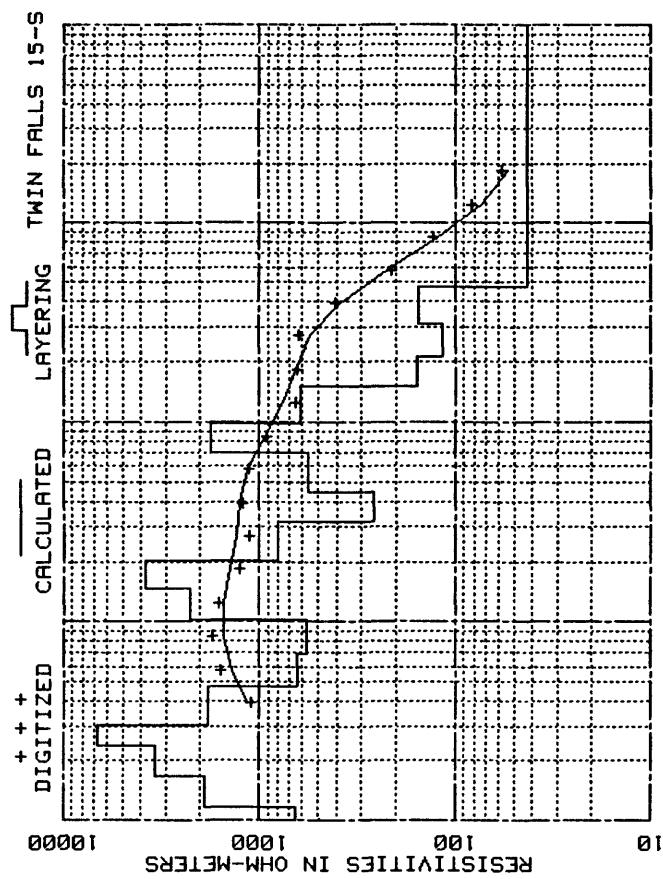
AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS	OBSERVED RESISTIVITY IN OHM-METERS
3.05	525.00	3200.00
4.27	690.00	2320.00
6.10	1020.00	1600.00
9.14	1160.00	1180.00
9.14	1195.00	660.00
12.19	1150.00	304.80
18.29	1450.00	426.72
24.38	1690.00	378.00
38.48	2010.00	340.00
38.48	1880.00	325.00
42.67	2050.00	914.48
60.96	2350.00	914.48
91.44	2500.00	320.00
121.92	1800.00	1219.20
		325.00
		325.00
		300.00
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		280.00
		270.00
		3048.00
		221.00



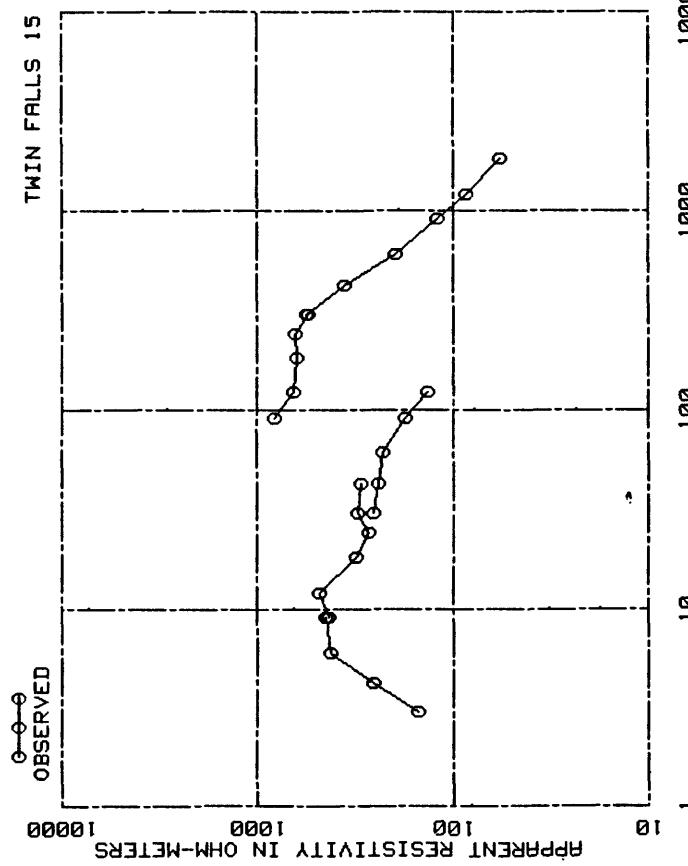


AB/2 IN METERS	OBSERVED IN RESISTIVITY METERS IN OHM-METERS	AB/2 IN RESISTIVITY METERS IN OHM-METERS
3.05	250.00	121.92
4.27	369.00	2459.00
6.18	495.00	2180.00
9.14	488.00	182.98
12.19	530.00	1520.00
9.14	449.00	1886.98
12.19	480.00	243.84
18.29	690.00	384.98
24.38	960.00	426.72
38.48	1160.00	560.00
42.67	938.00	609.68
38.48	1840.00	398.98
42.67	1490.00	914.40
60.96	1510.00	362.00
91.44	1558.00	914.40

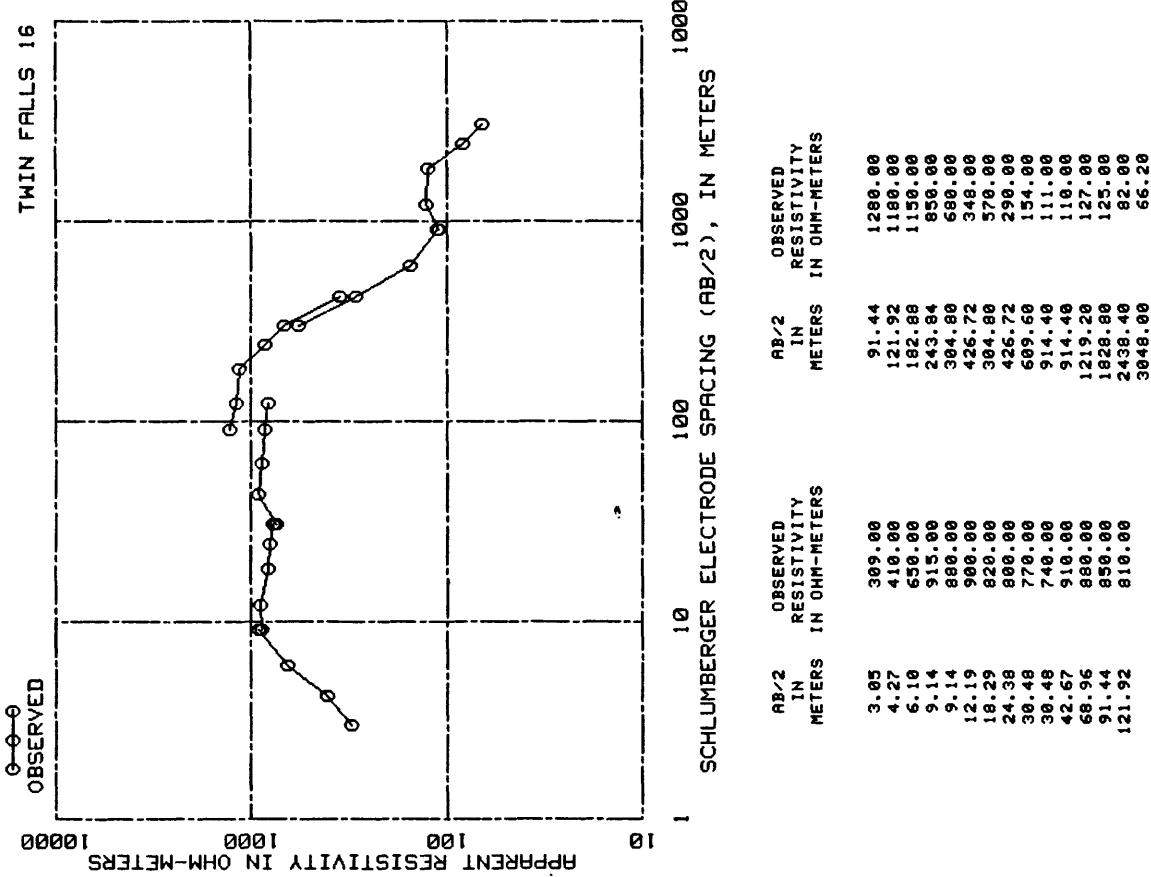
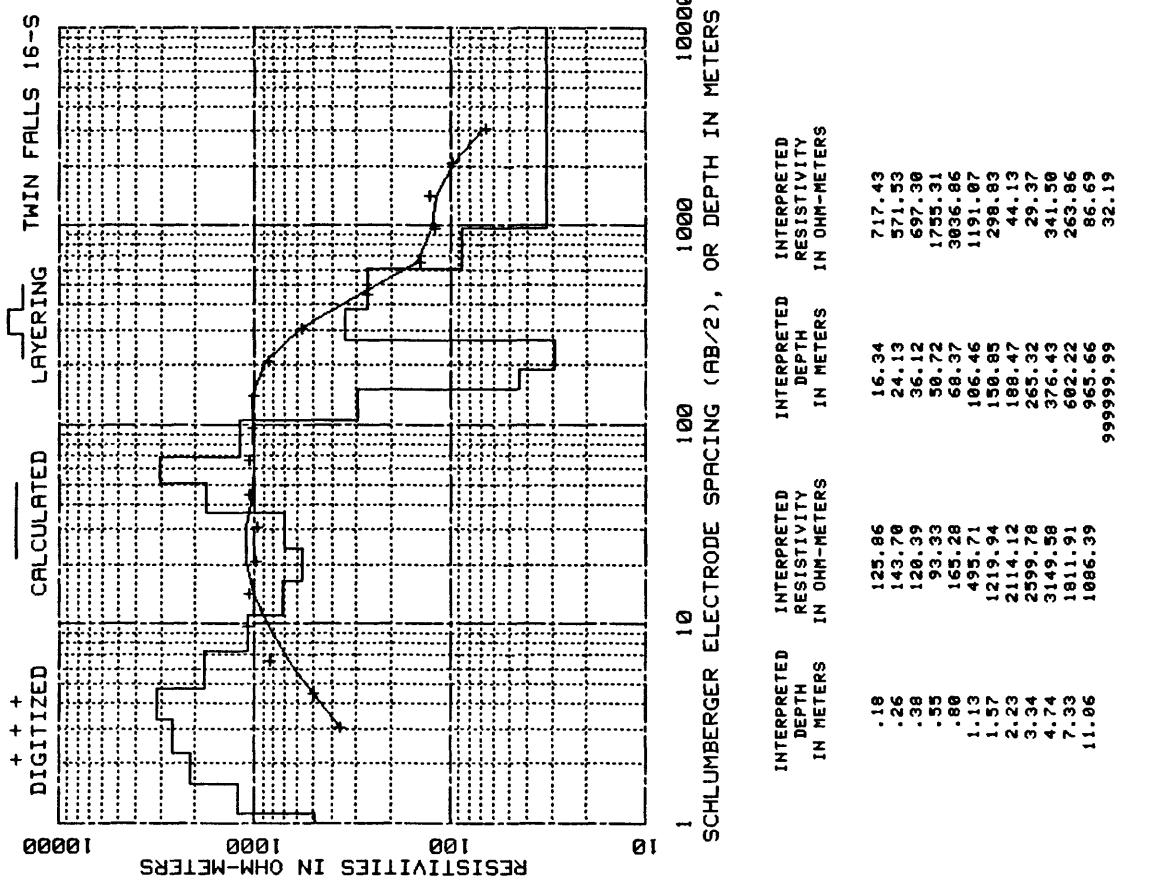




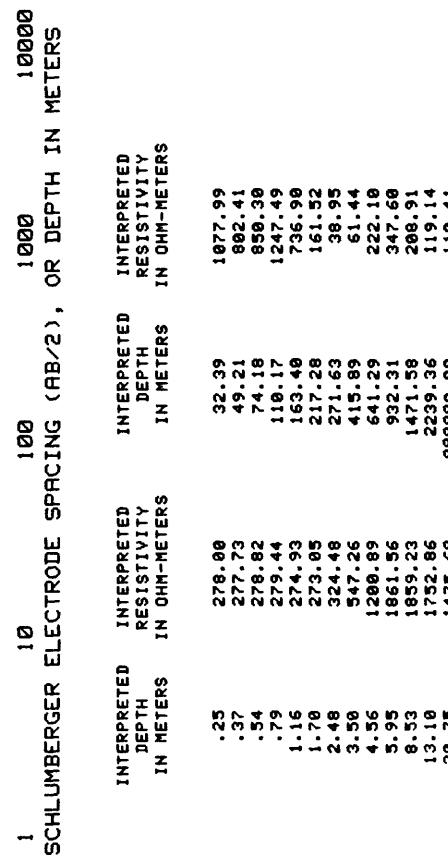
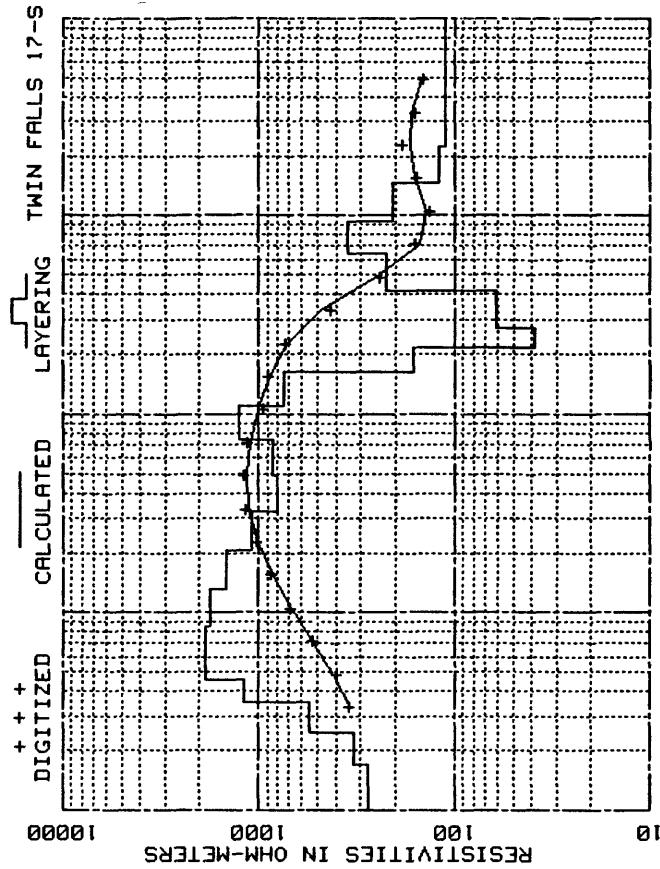
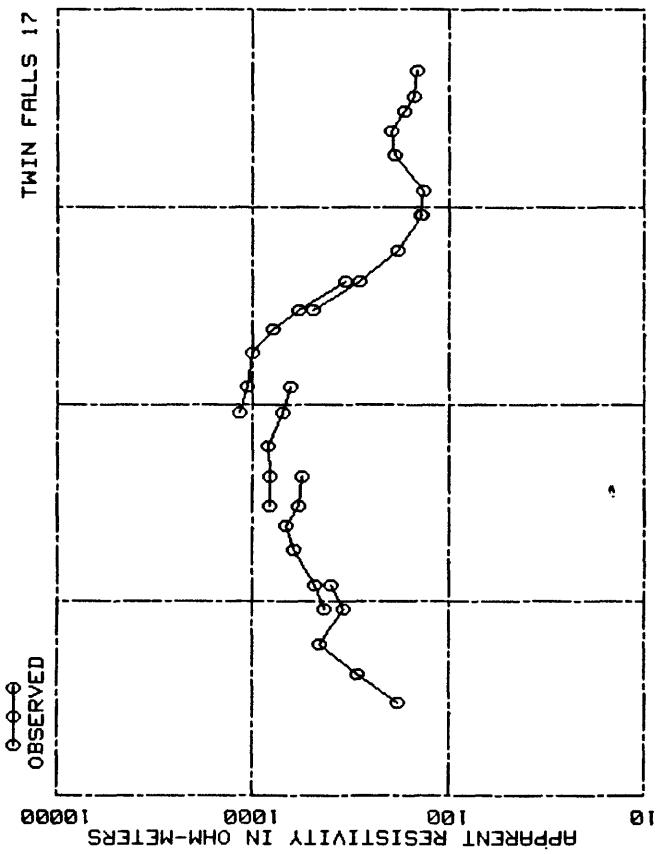
INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED RESISTIVITY IN OHM-METERS	
		SCHLUMBERGER ELECTRODE SPACING (AB/2), OR DEPTH IN METERS	TWIN FALLS 15-5
.17	542.76	10.38	572.81
.26	548.81	14.82	2271.16
.37	872.97	20.30	3800.98
.54	682.81	31.19	885.95
.79	330.80	44.20	261.29
1.16	651.72	69.87	568.56
1.65	1915.16	97.40	1765.71
2.39	3401.49	152.27	611.57
3.03	6664.97	211.31	155.41
4.78	1820.01	308.04	116.76
6.94	644.23	477.48	153.98
		999999.99	42.42



AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS	AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS
3.85	150.00	91.44	175.00
4.27	254.00	121.92	135.00
6.18	425.00	91.44	810.00
9.14	445.00	121.92	650.00
9.14	428.00	182.88	625.00
12.19	485.00	243.84	642.00
18.29	315.00	384.88	550.00
24.38	270.00	304.88	560.00
30.48	305.00	426.72	360.00
42.67	295.00	609.60	195.00
30.48	248.00	914.40	120.00
42.67	248.00	1219.20	85.00
60.95	228.00	1828.80	58.00



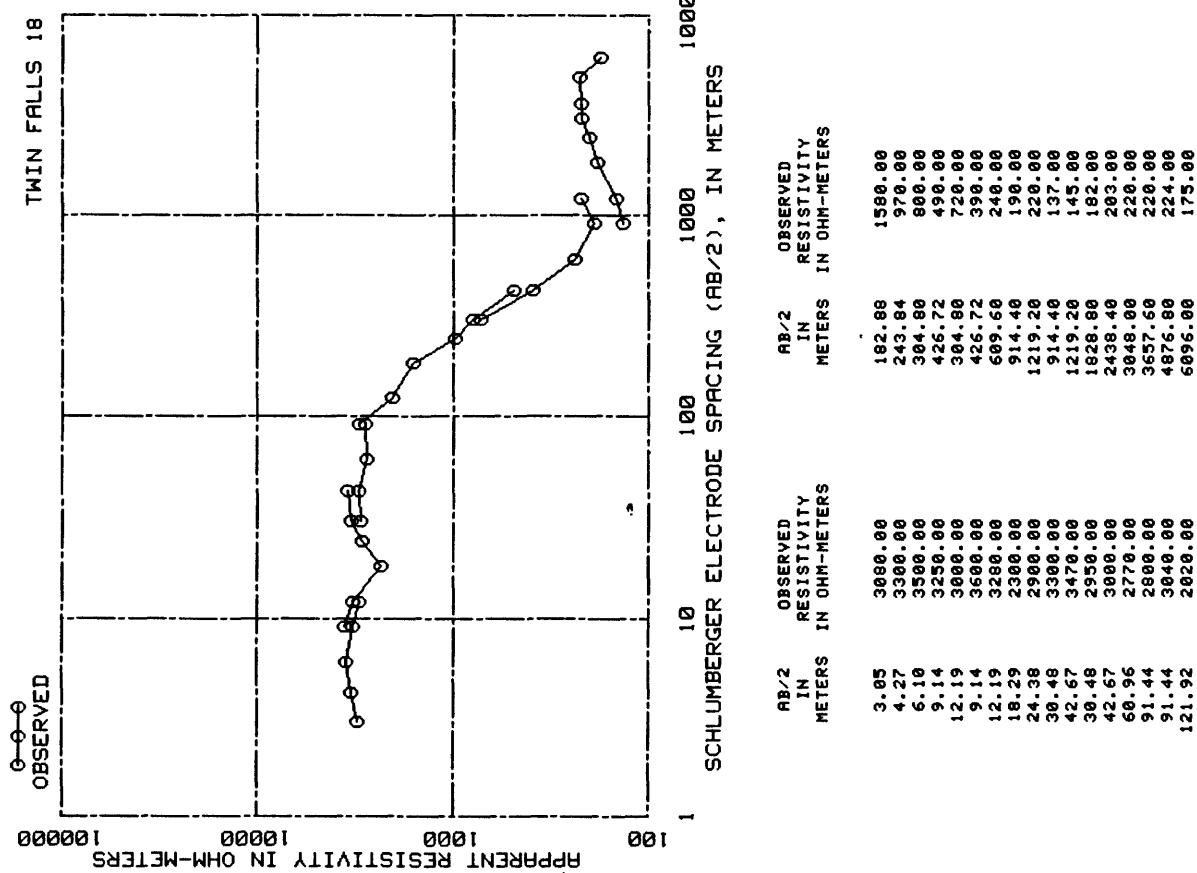
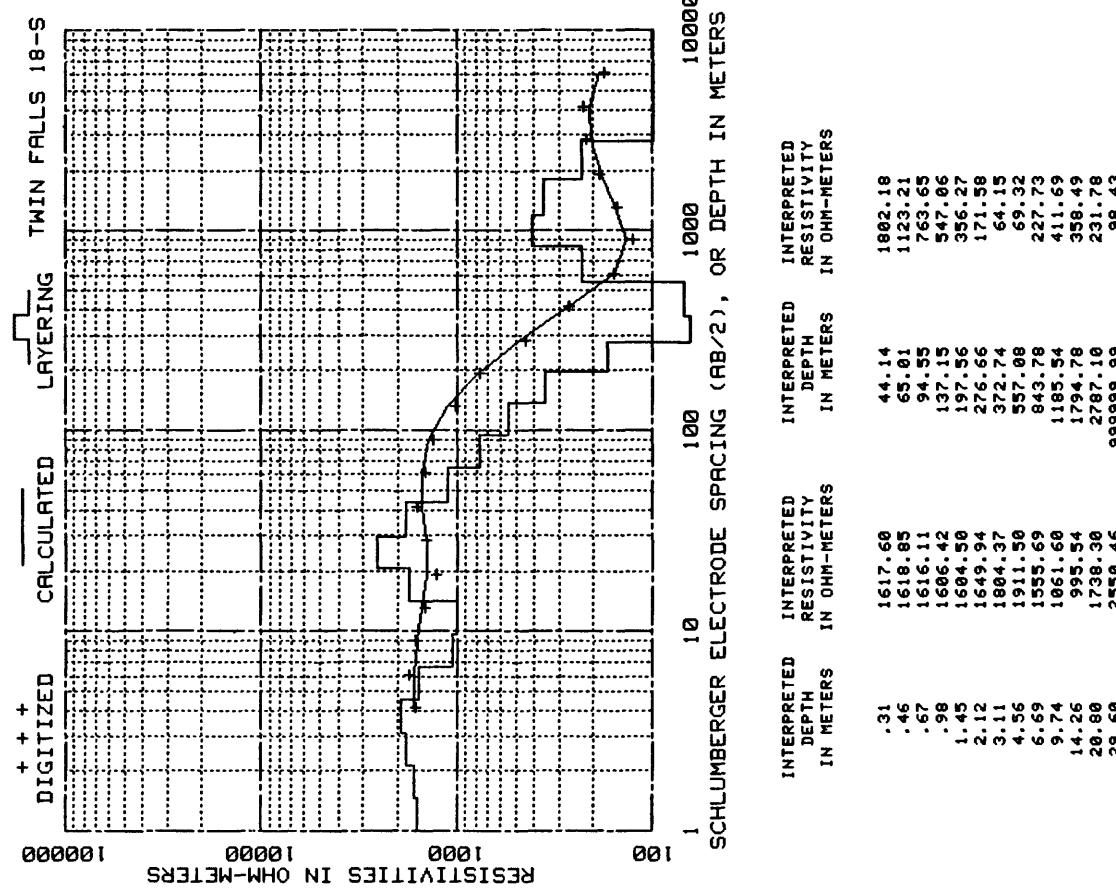
AB/2 IN METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED RESISTIVITY IN OHM-METERS
.18	125.86	16.34	717.43
.26	143.70	24.13	571.53
.38	126.39	36.12	697.38
.55	93.33	50.72	1755.31
.86	165.28	68.37	3036.86
1.13	495.71	106.46	1191.07
1.57	1219.94	150.85	298.83
2.23	2114.12	188.47	44.13
3.34	2599.78	265.32	29.37
4.74	3149.58	376.43	341.50
7.73	1811.91	602.22	263.86
11.06	1086.39	965.66	86.69
		99999.99	32.19

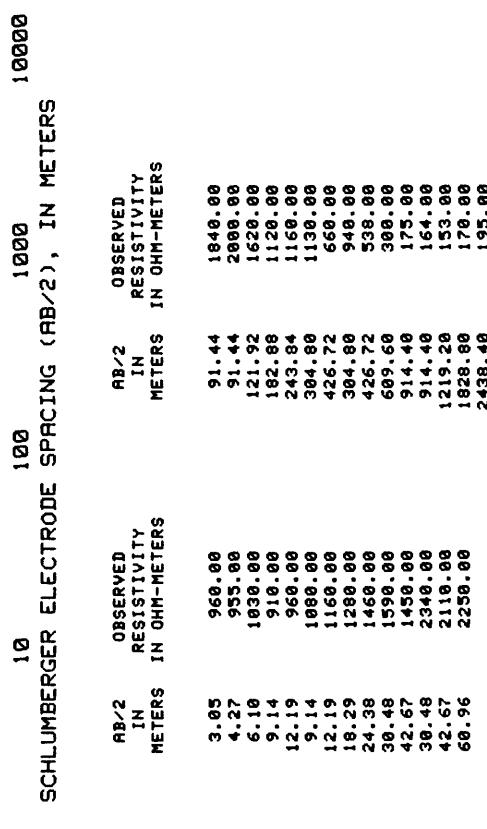
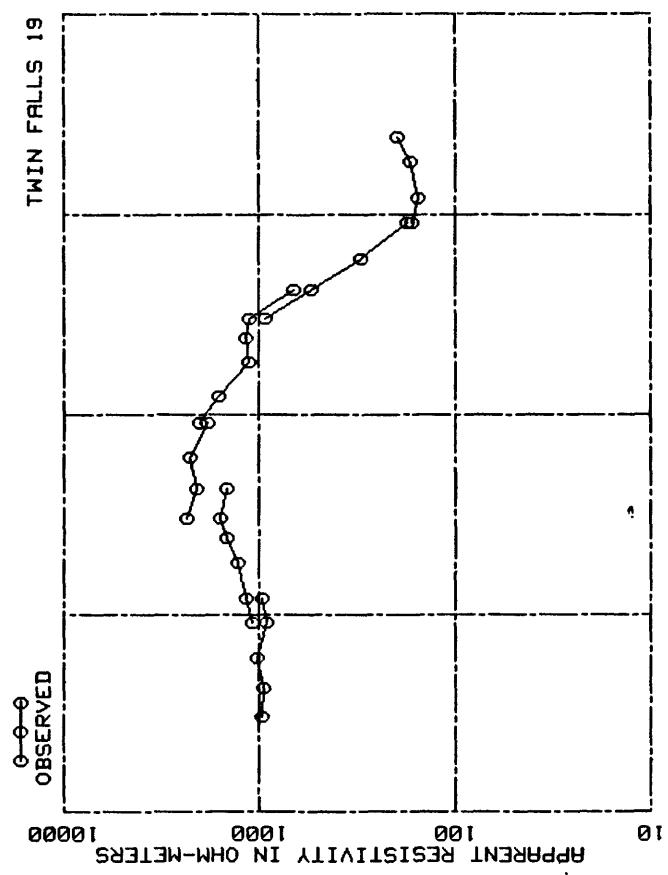
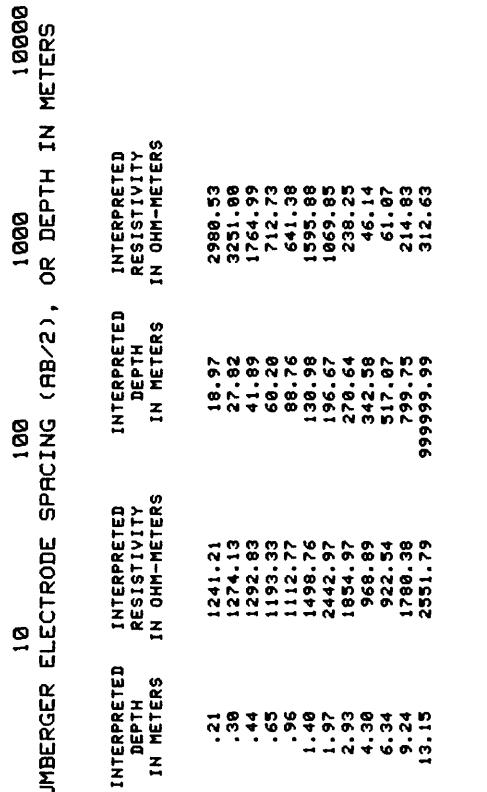
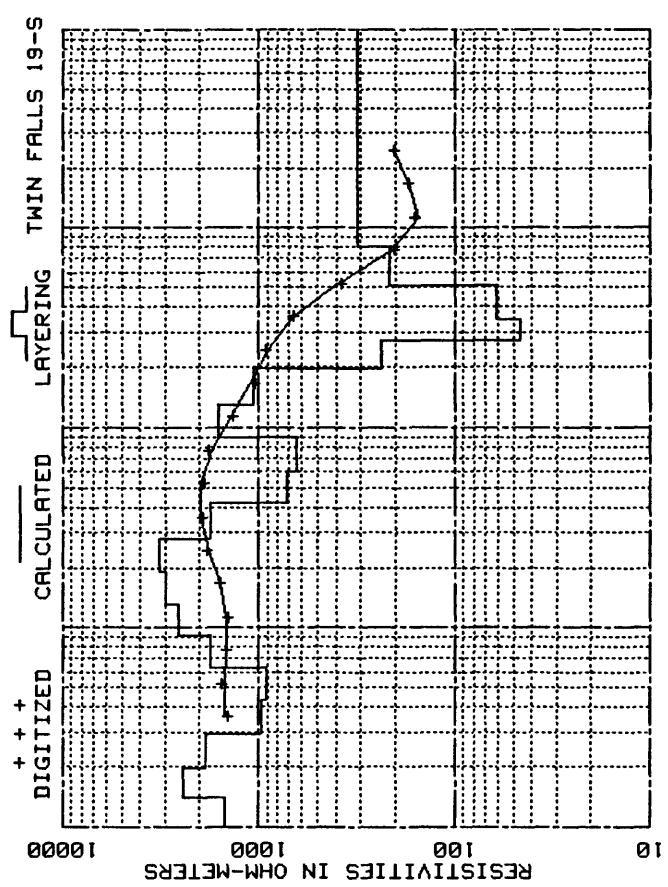


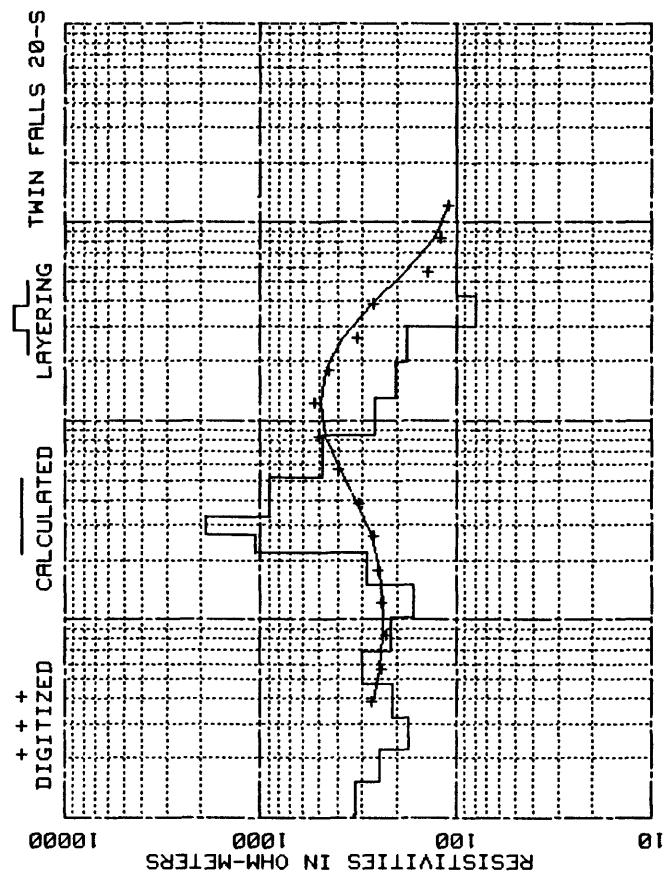
SCHLUMBERGER ELECTRODE SPACING (AB/2), OR DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
100000	100000
10000	10000
1000	1000
100	100
10	10
1	1

SCHLUMBERGER ELECTRODE SPACING (AB/2), OR DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
100000	100000
10000	10000
1000	1000
100	100
10	10
1	1

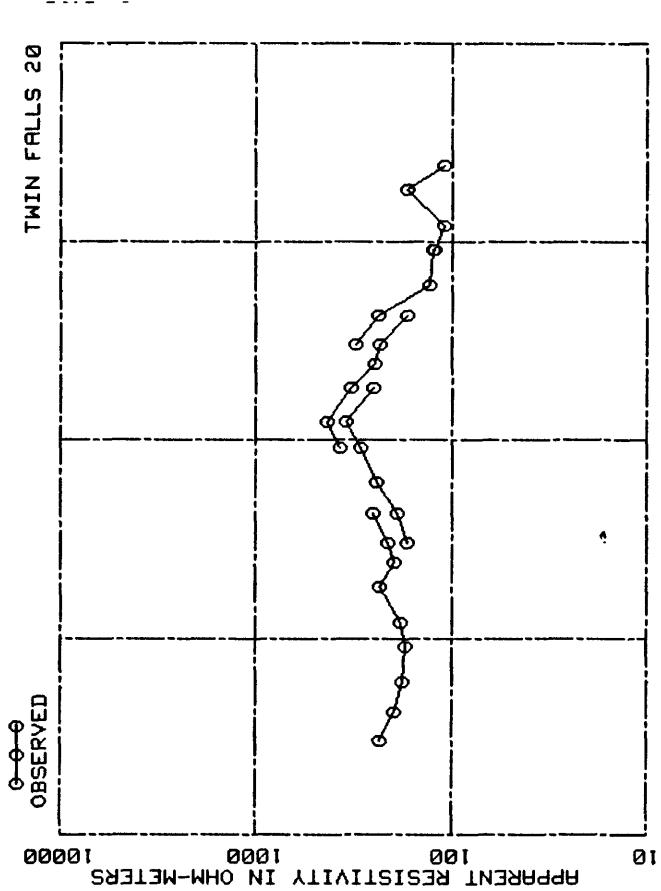
AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS	OBSERVED AB/2 IN METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
3.05	180.00	91.44	1170.00	32.39
4.27	298.00	121.92	1078.00	49.21
6.19	460.00	182.88	1000.00	802.41
9.14	345.00	243.84	798.00	856.38
12.19	488.00	304.38	580.00	1247.49
9.14	435.00	426.72	340.00	163.49
12.19	488.00	384.88	498.00	736.99
18.29	628.00	426.72	285.00	217.28
24.38	688.00	609.60	180.00	161.52
38.48	580.00	914.40	137.00	38.95
42.67	560.00	914.40	140.00	21.63
38.48	810.00	1219.28	135.00	145.99
42.67	810.00	1828.80	187.00	2229.36
68.96	840.00	2438.40	194.00	119.14
91.44	788.00	3048.00	170.00	2229.36
121.92	640.00	3657.60	150.00	118.41
		4876.80	146.00	99999.99
			20.75	1475.69



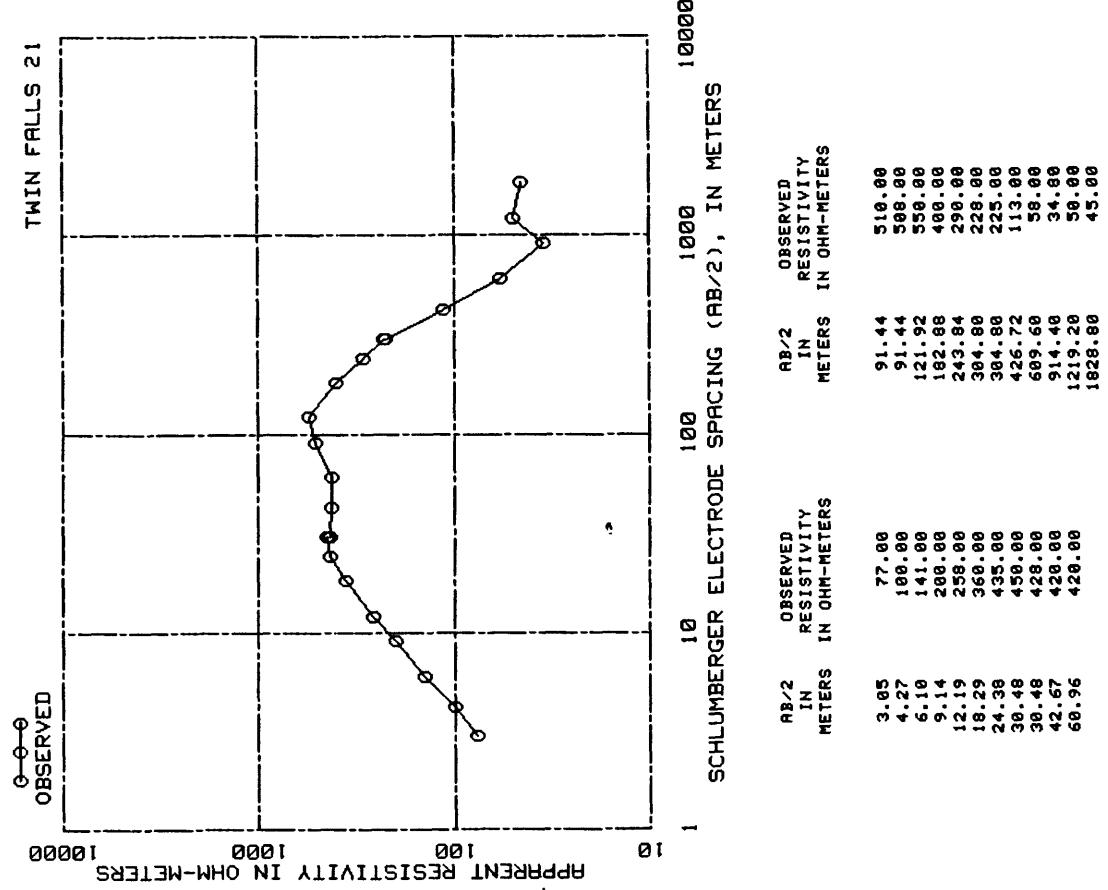
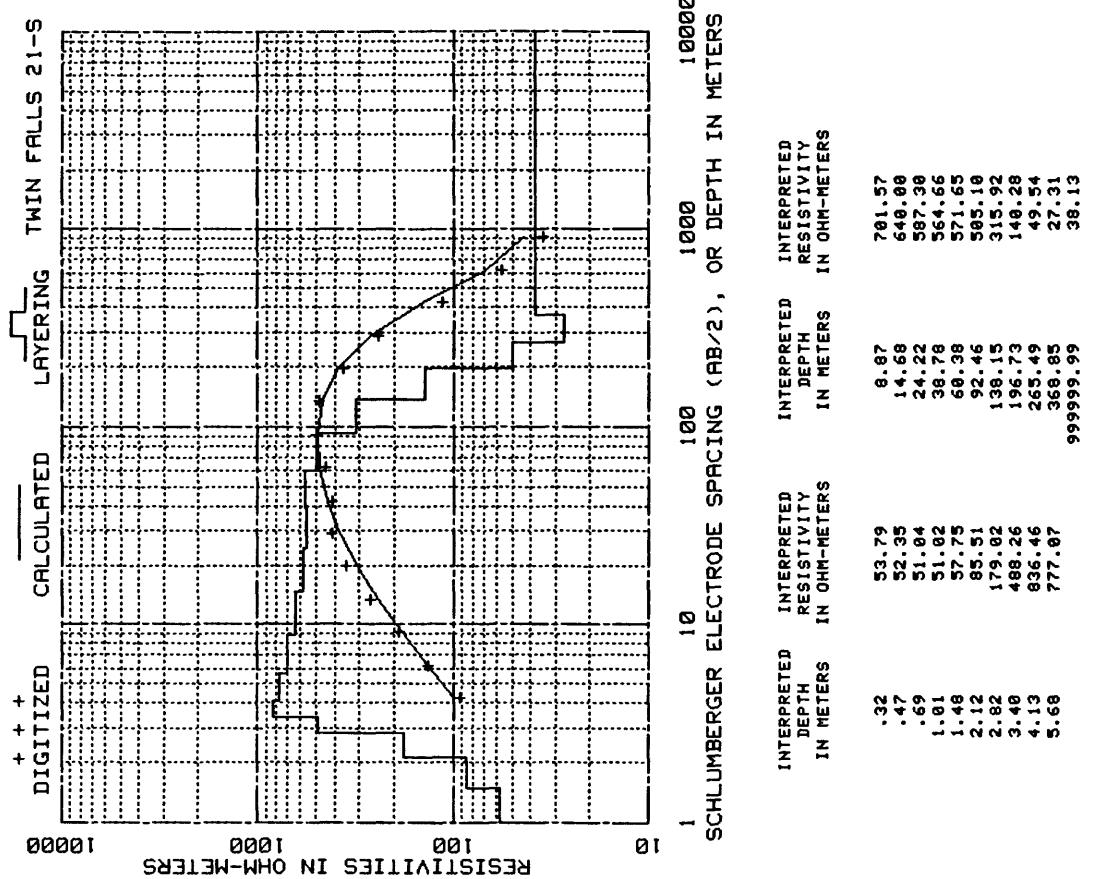


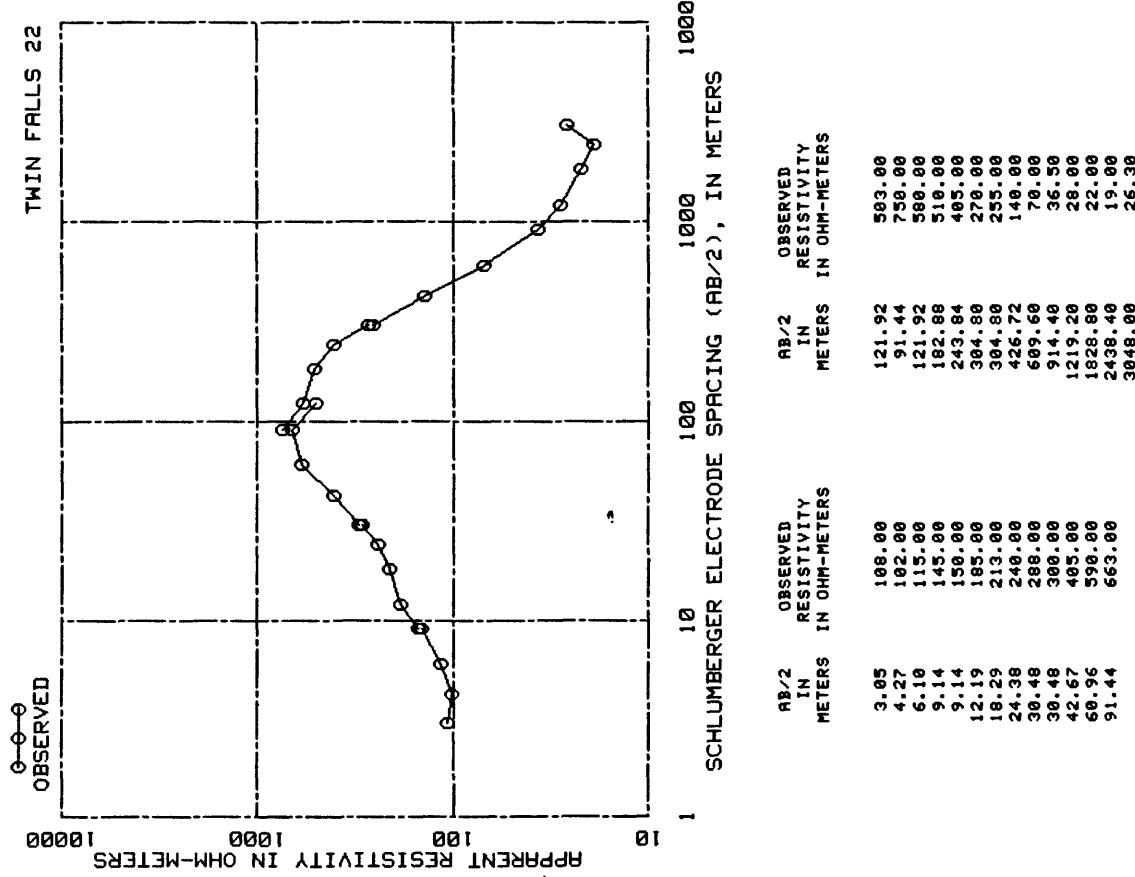
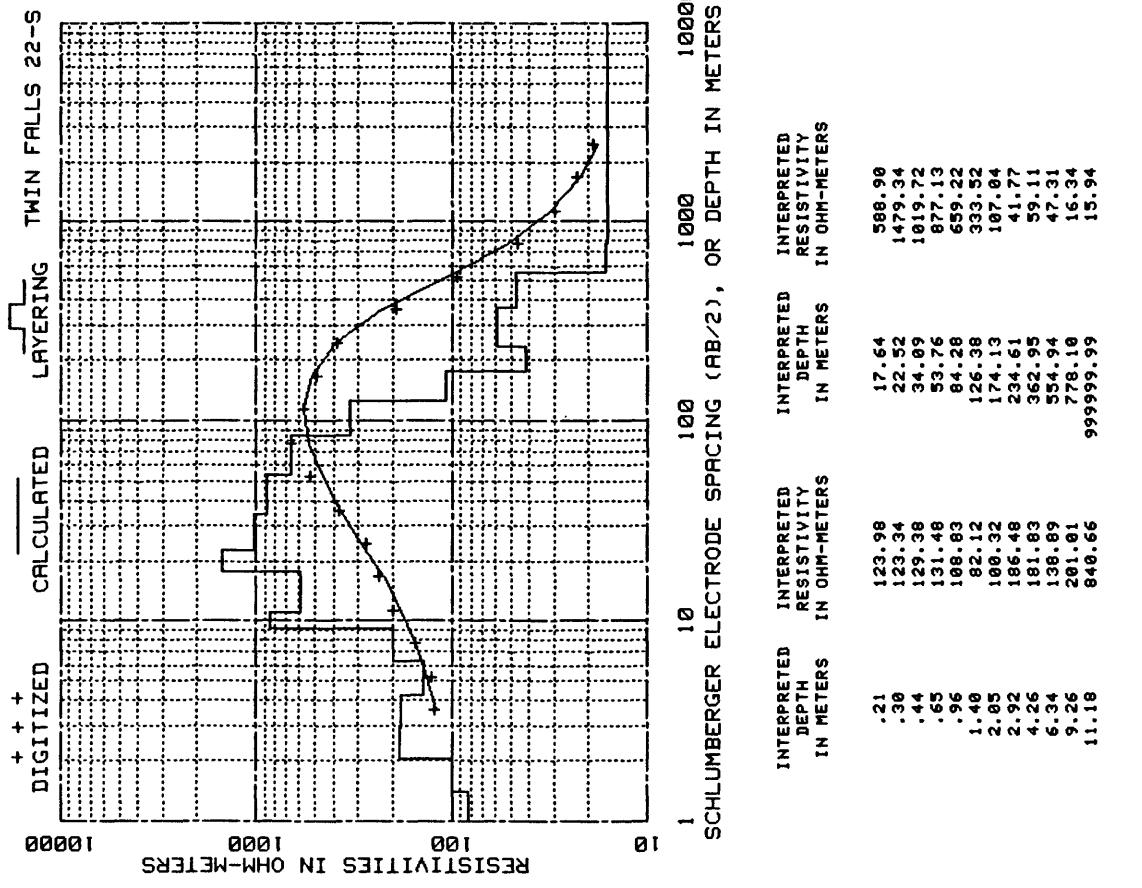


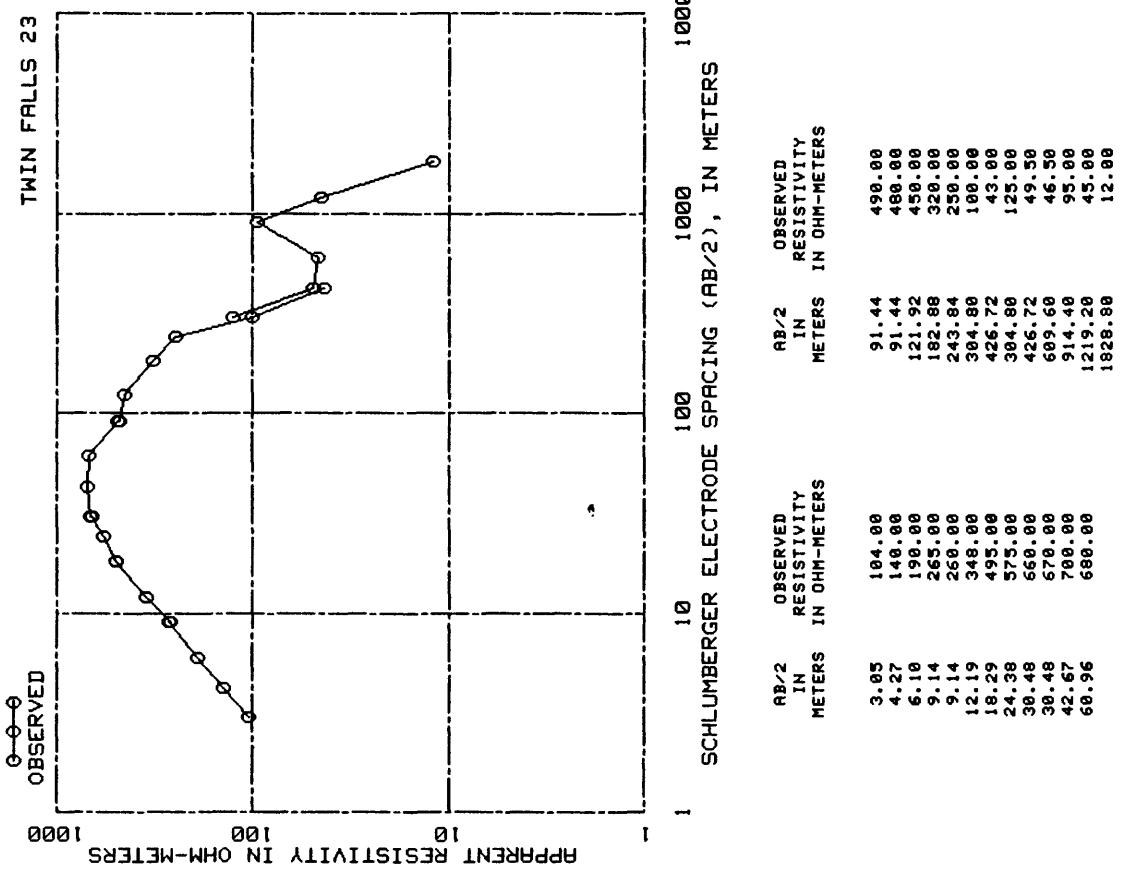
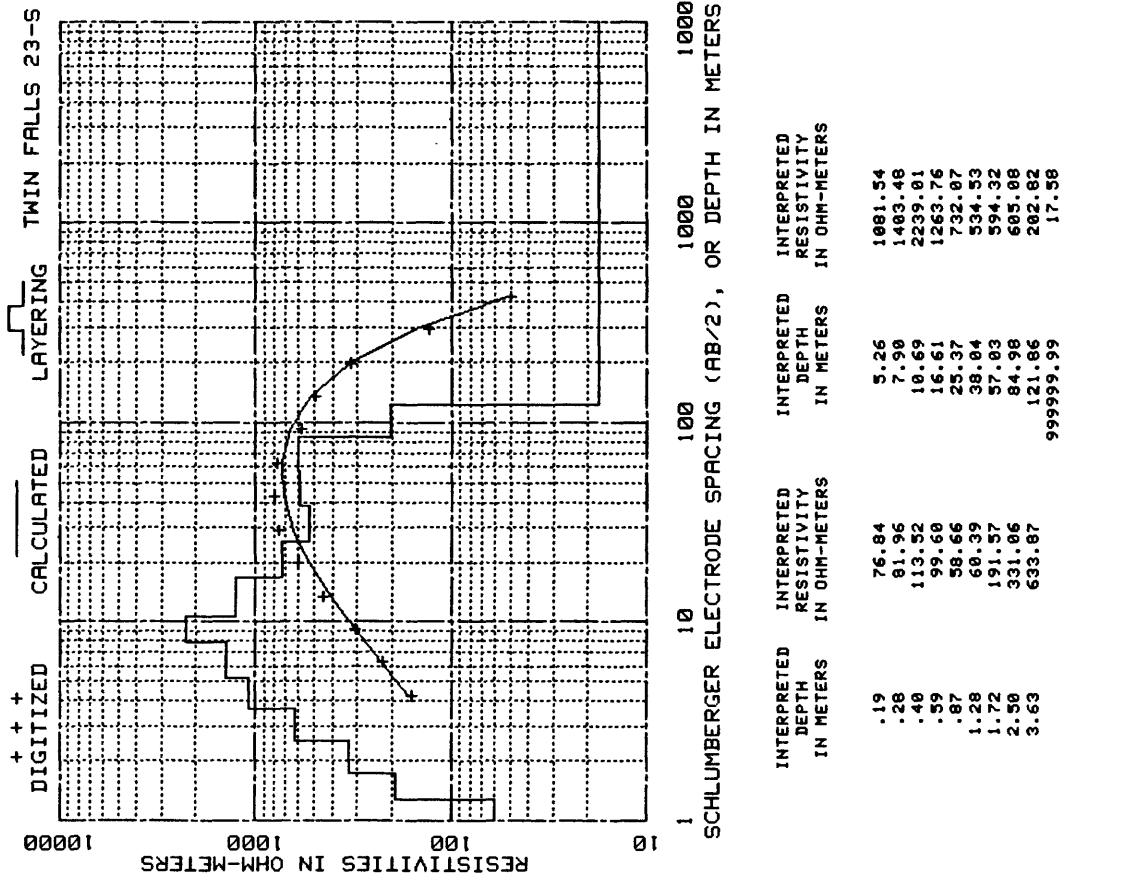
SCHLUMBERGER ELECTRODE SPACING (AB/2), OR DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
1	.22	315.87	14.94
10	.33	313.93	21.81
100	.48	318.41	26.90
1000	.78	314.60	1967.25
10000	1.03	332.80	1918.59
	1.51	327.21	905.65
	2.22	245.88	485.84
	3.22	174.67	261.22
	4.74	196.23	284.33
	6.93	209.59	295.93
	10.28	302.92	178.24
	16.41	216.41	421.68
			79.05
			100.05
			999999.99

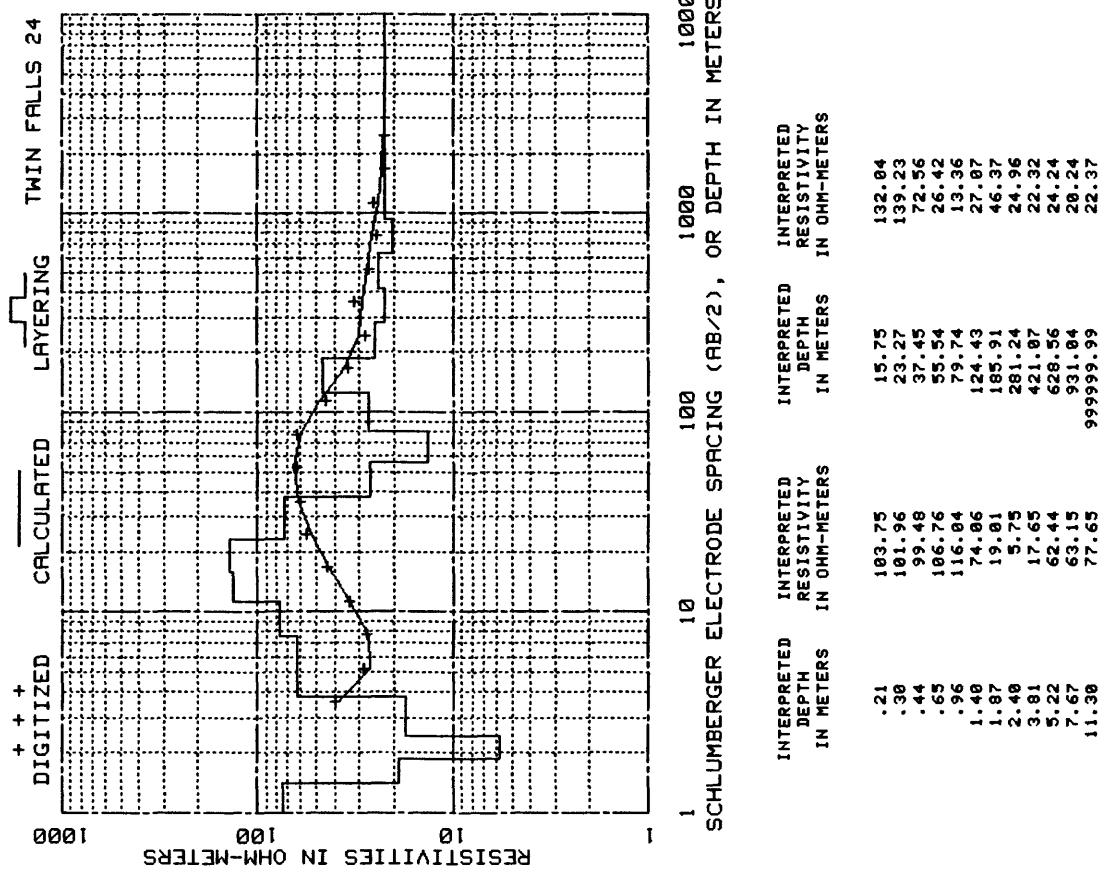
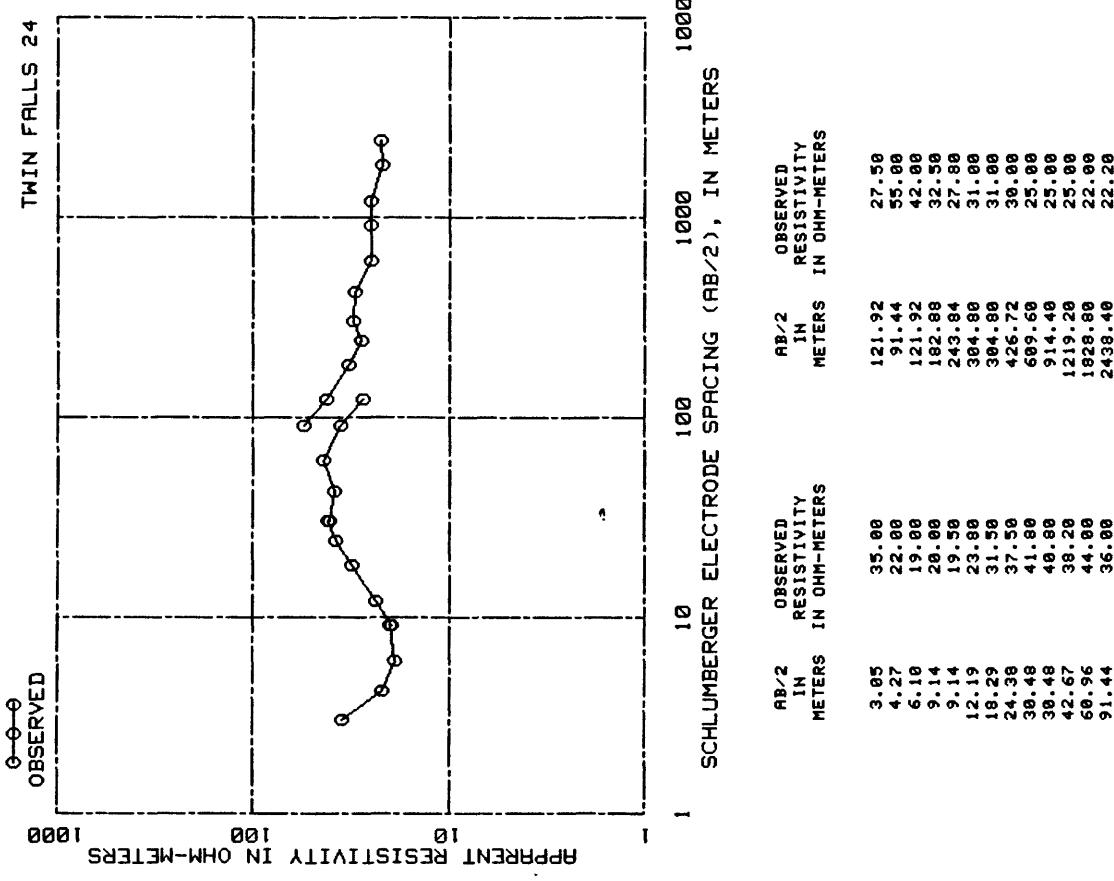


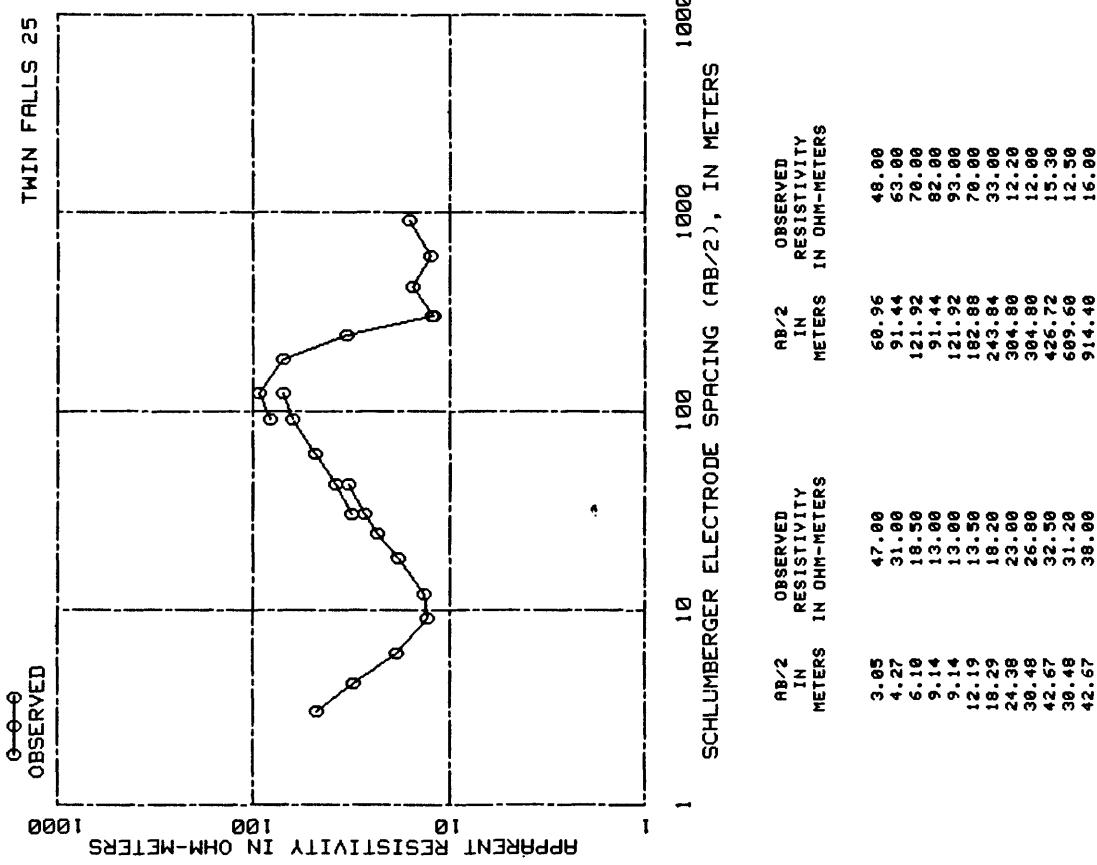
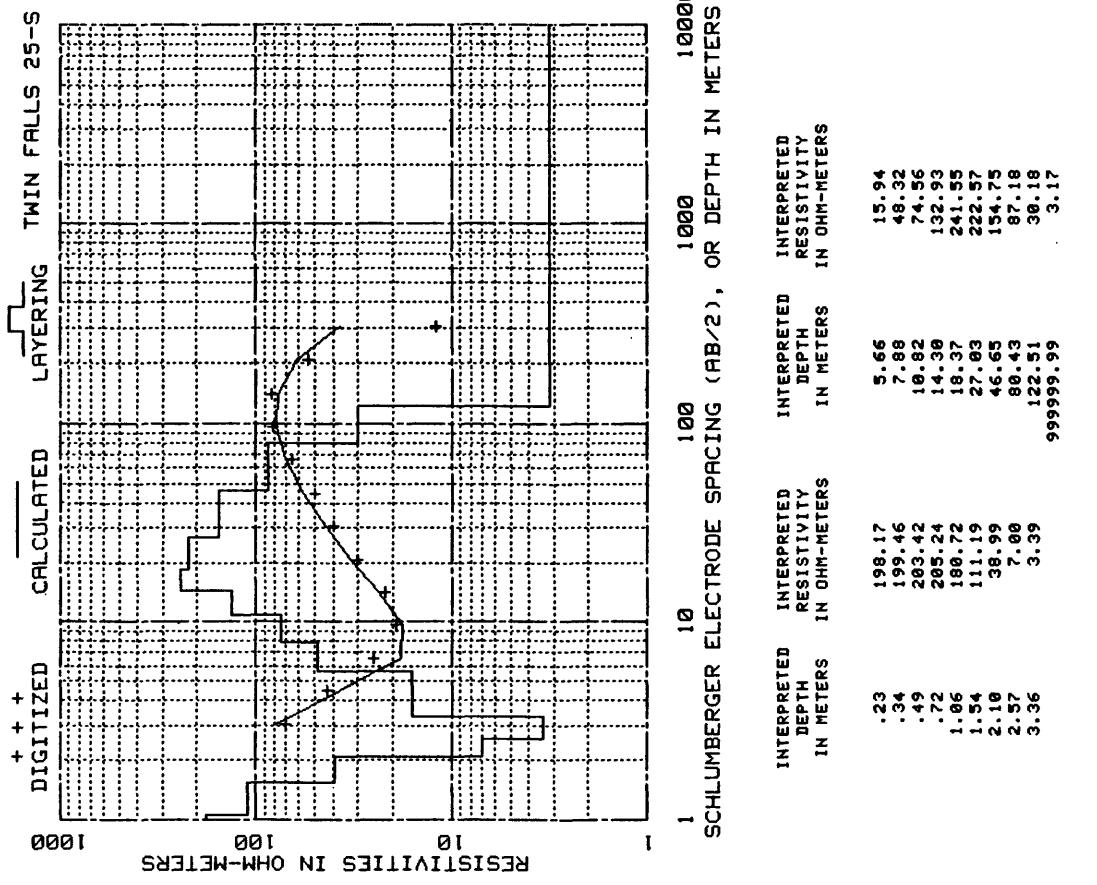
APPARENT RESISTIVITY IN OHM-METERS	OBSERVED RESISTIVITY IN OHM-METERS	APPARENT RESISTIVITY IN OHM-METERS	OBSERVED RESISTIVITY IN OHM-METERS
3.05	230.00	182.88	182.88
4.27	195.00	91.44	370.00
6.18	178.00	121.92	435.00
9.14	172.00	182.88	325.00
9.14	171.00	243.84	245.00
12.19	188.00	304.88	228.00
18.29	230.00	426.72	178.00
24.38	196.00	304.88	308.00
30.48	210.00	426.72	225.00
42.67	248.00	689.60	138.00
30.48	167.00	914.46	125.00
42.67	188.00	914.46	122.00
60.96	242.00	1219.20	118.00
91.44	293.00	1828.80	170.00
121.92	343.00	2438.48	110.00

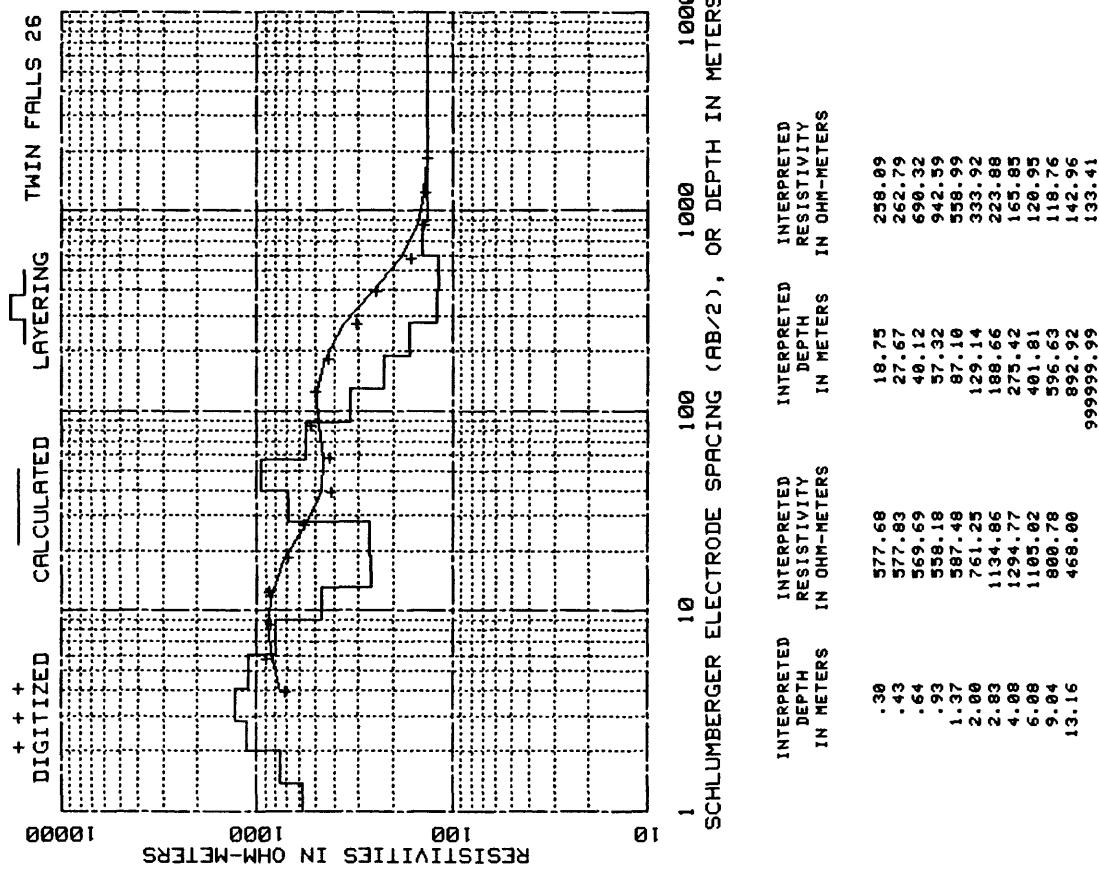
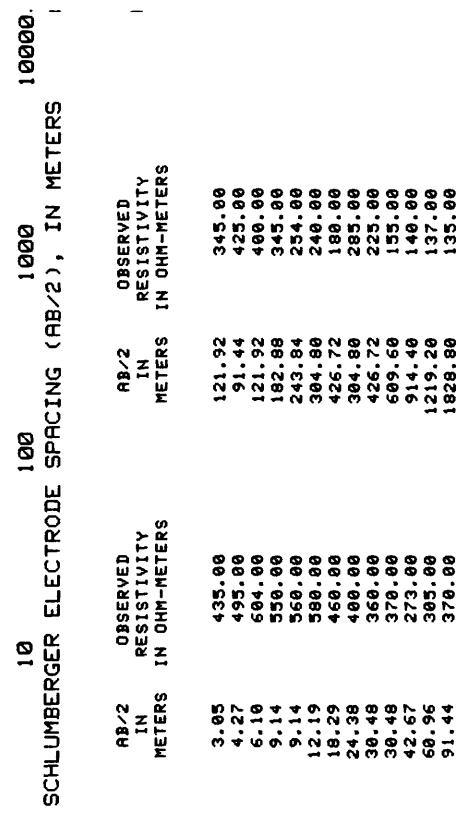
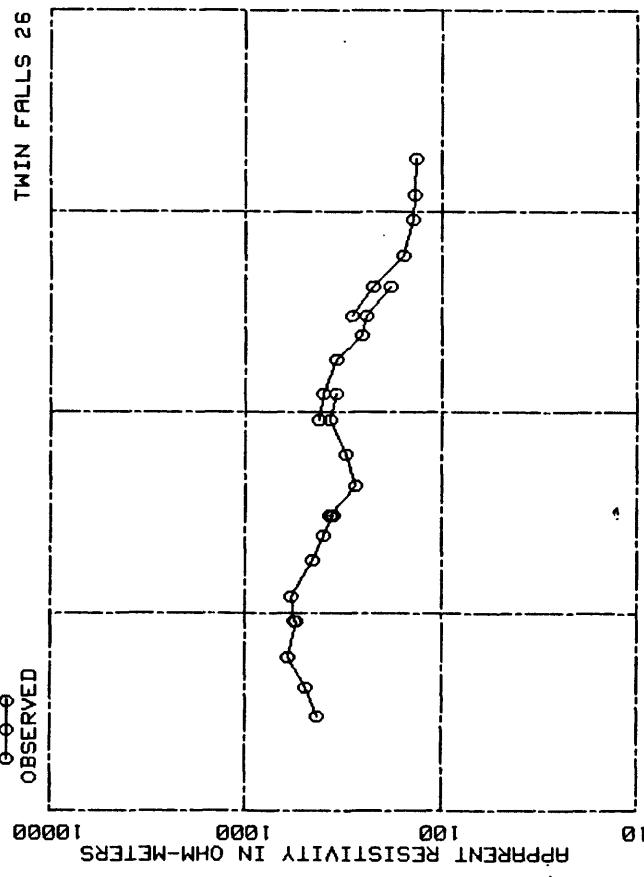


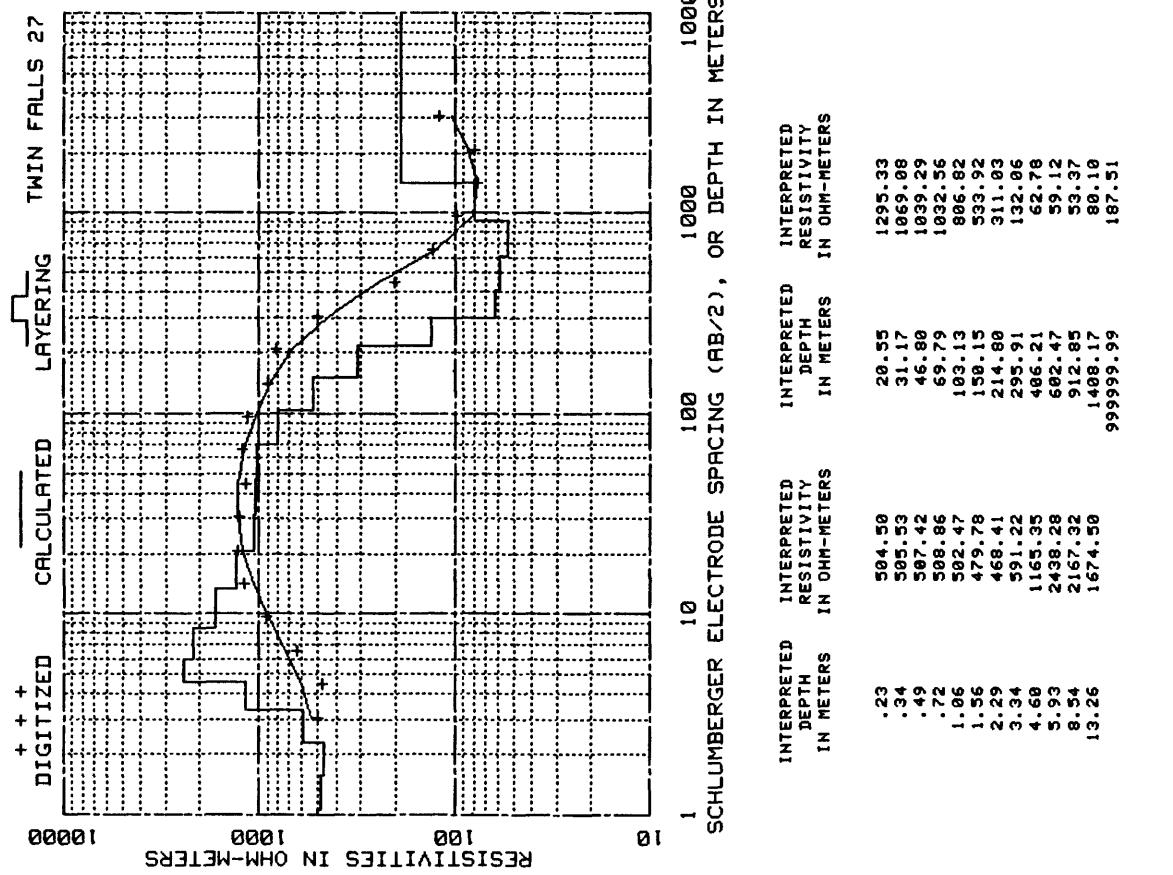
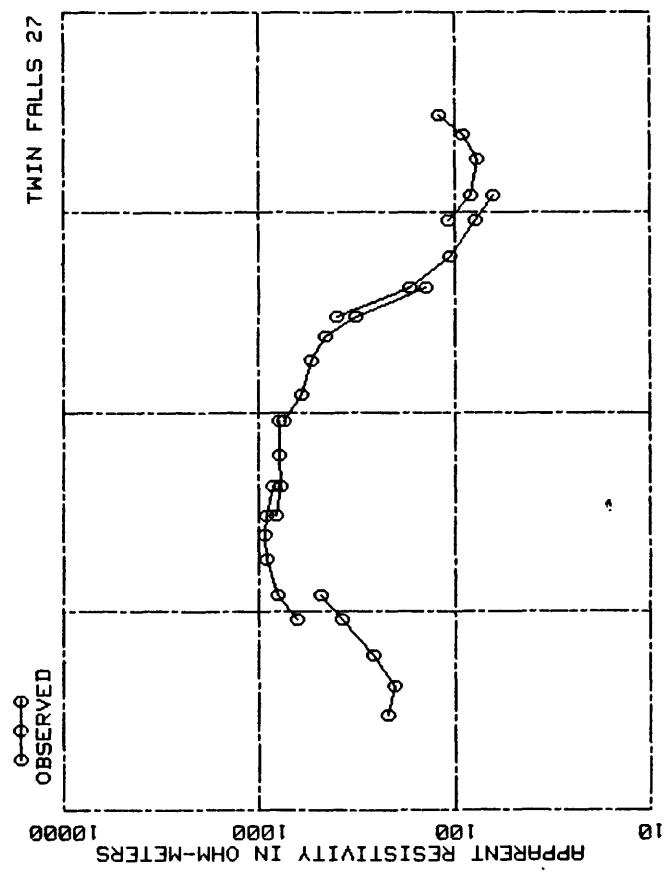


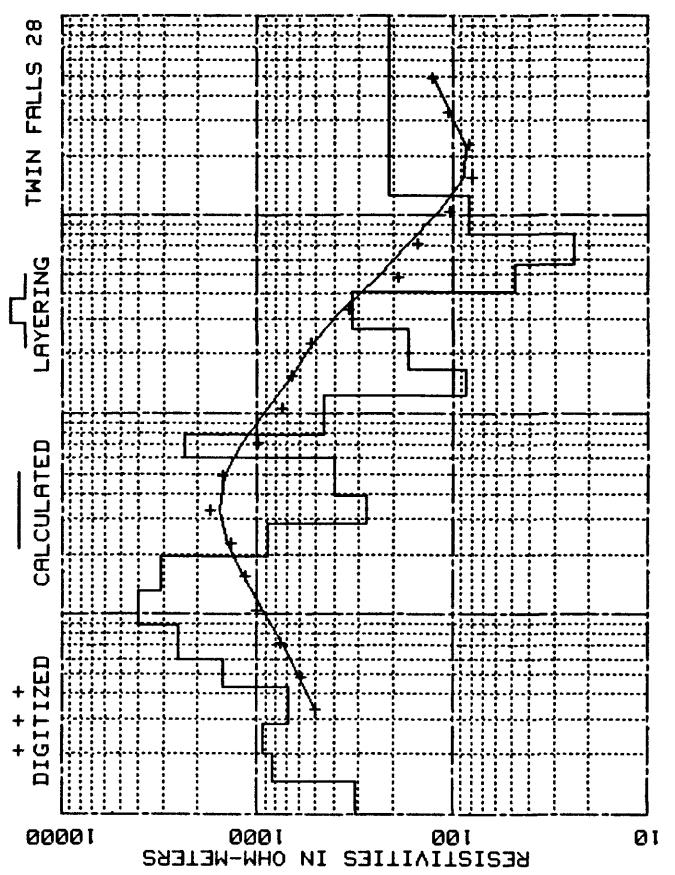
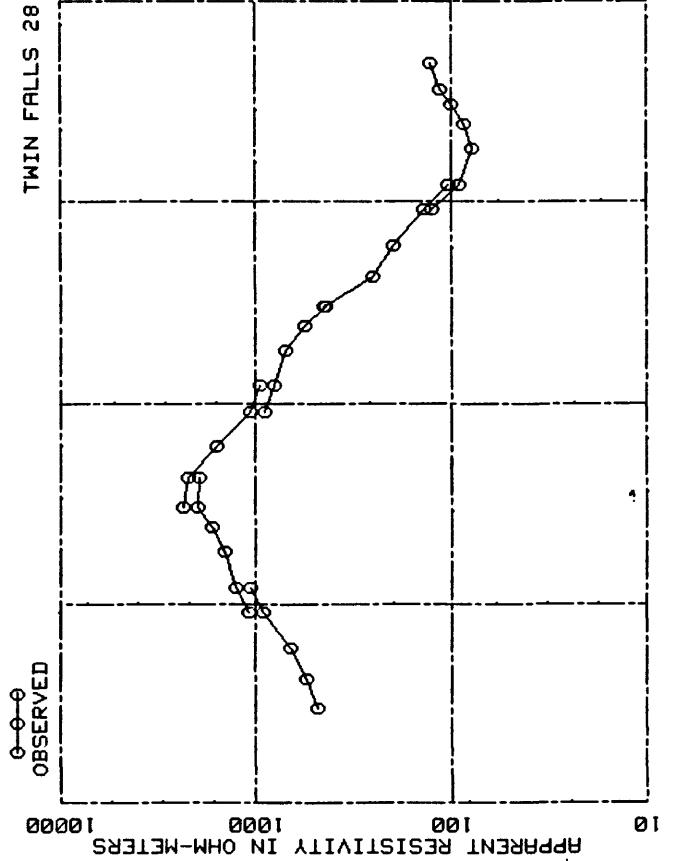




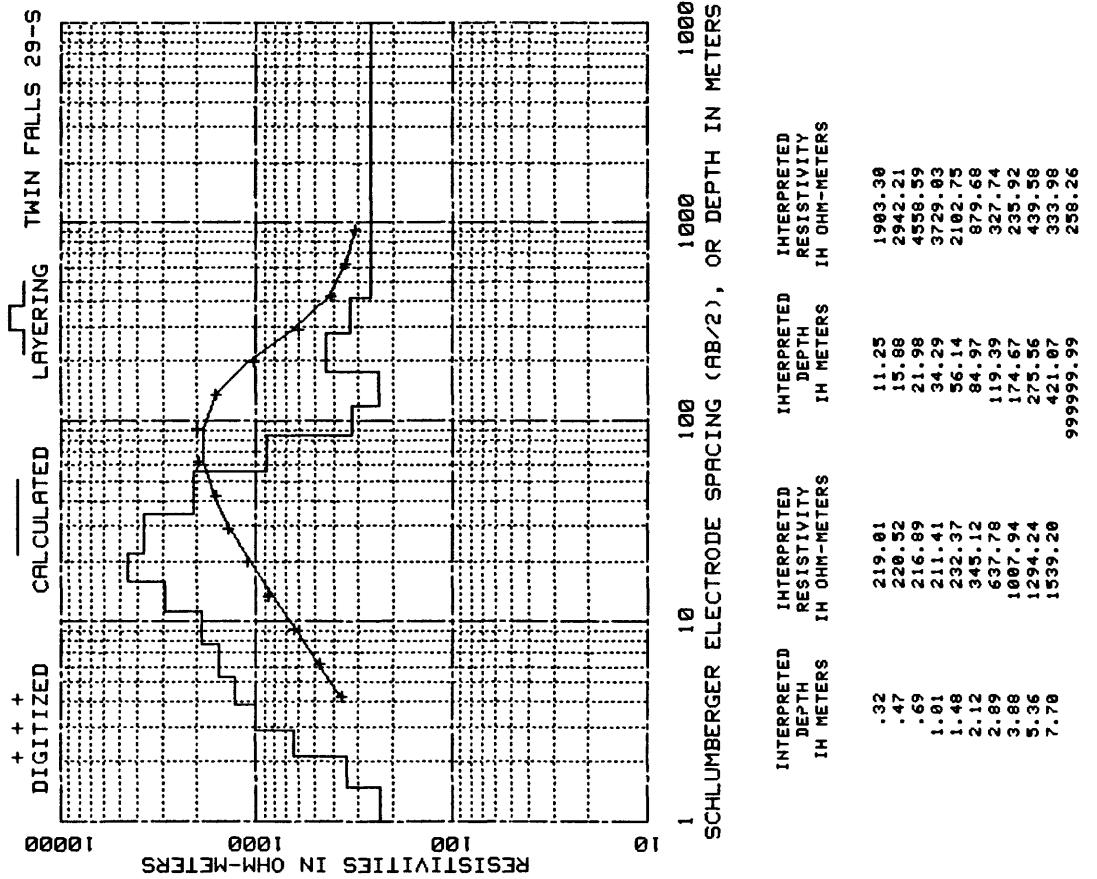
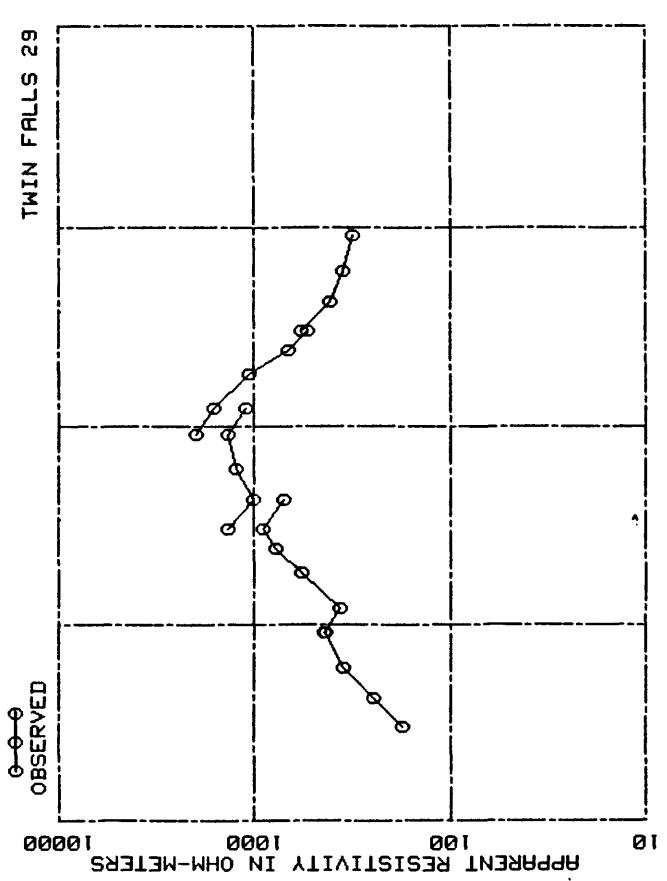


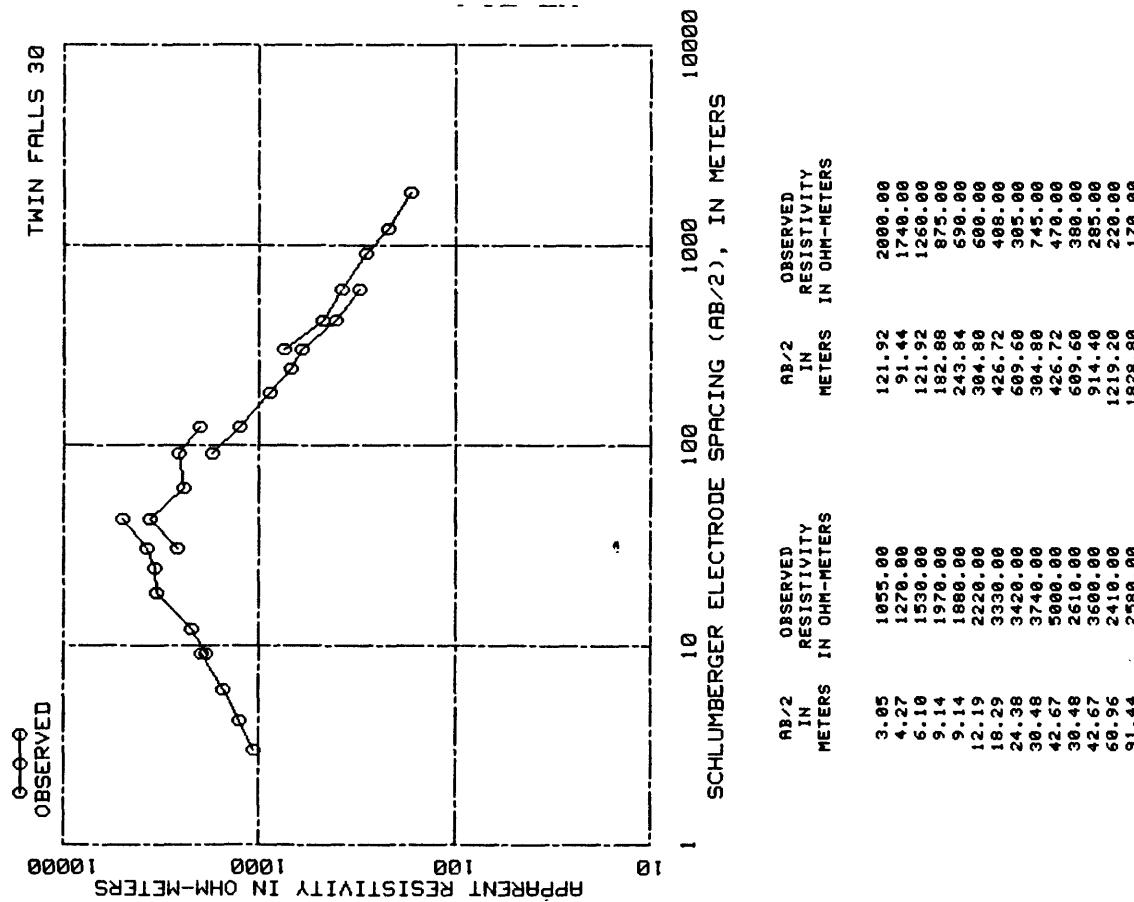
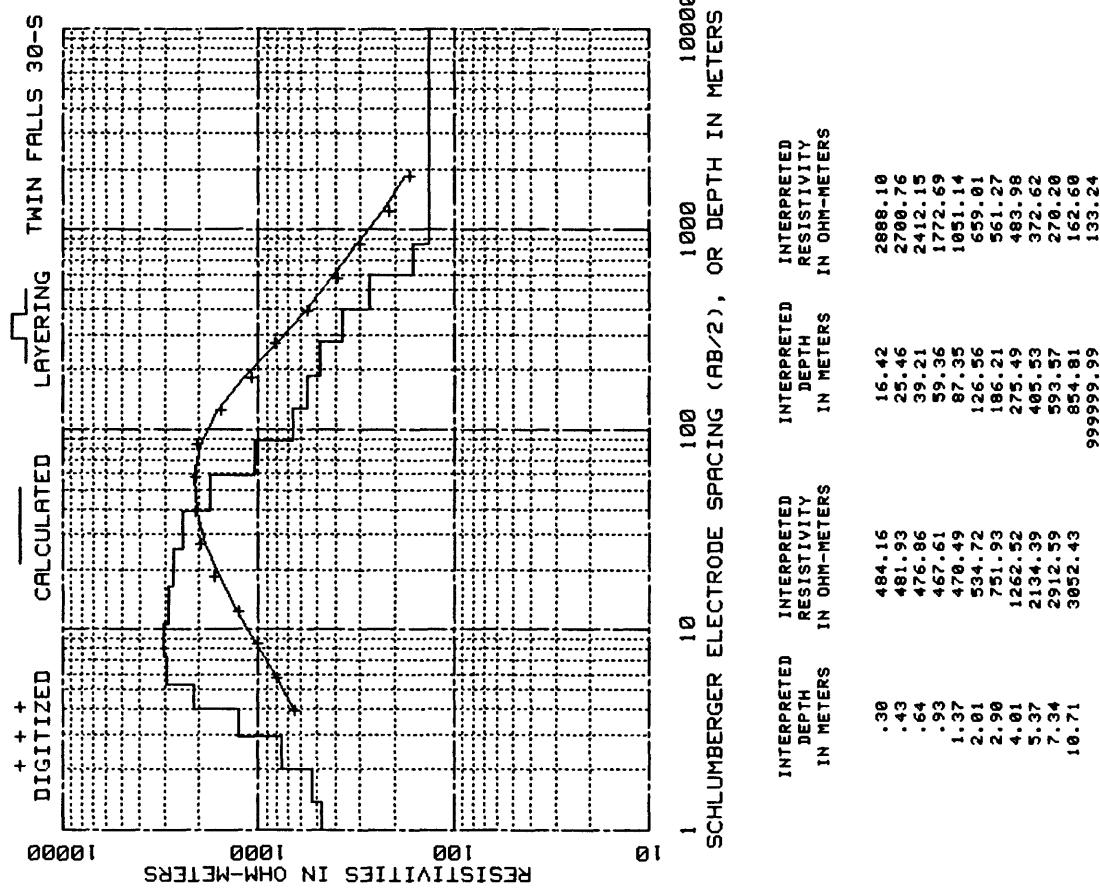




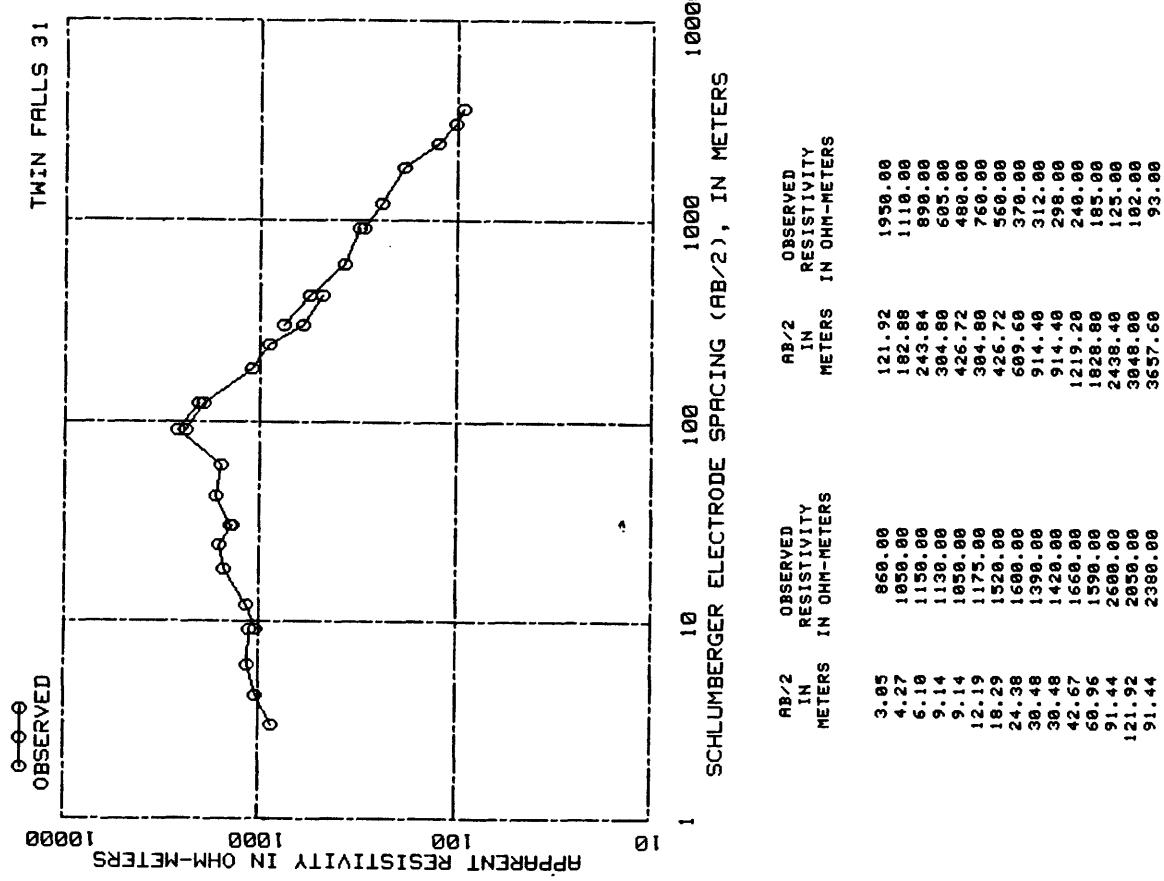
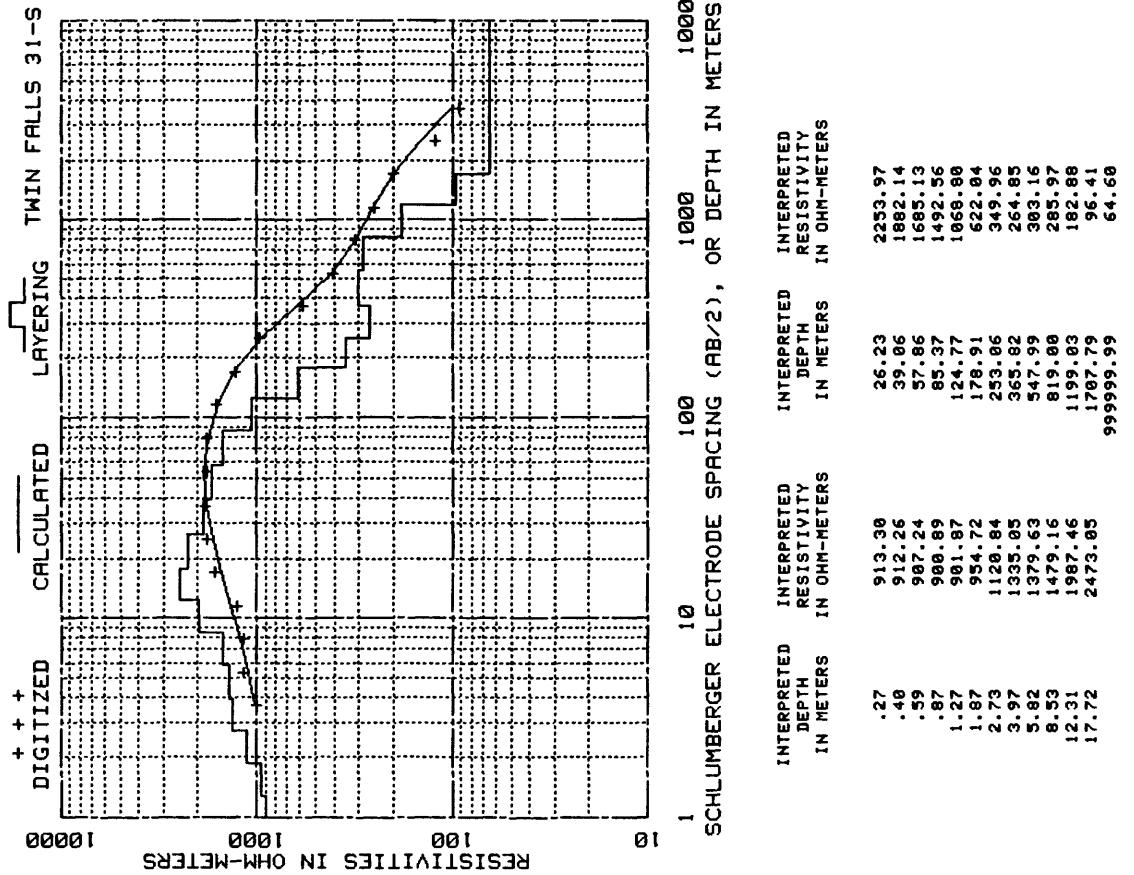


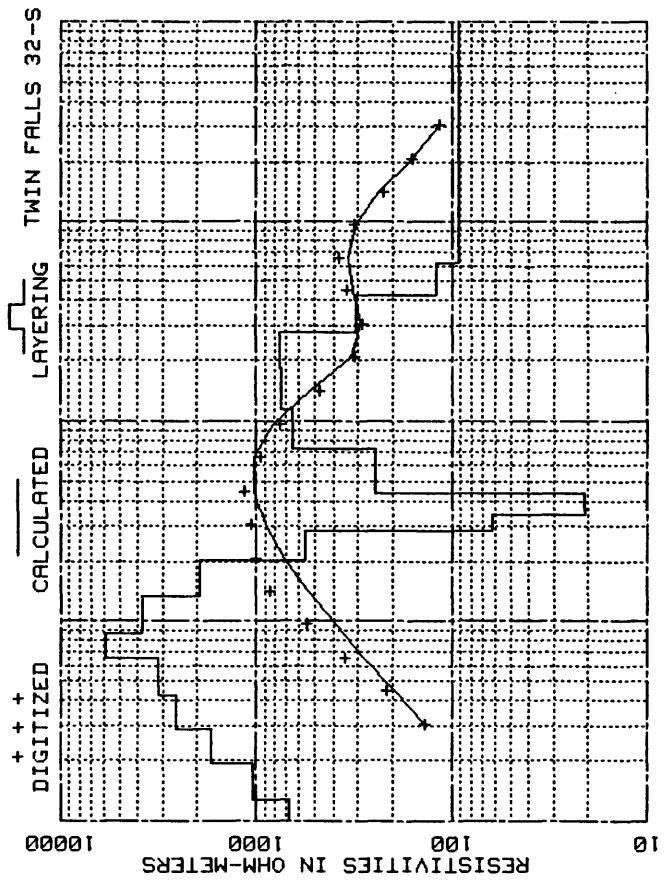
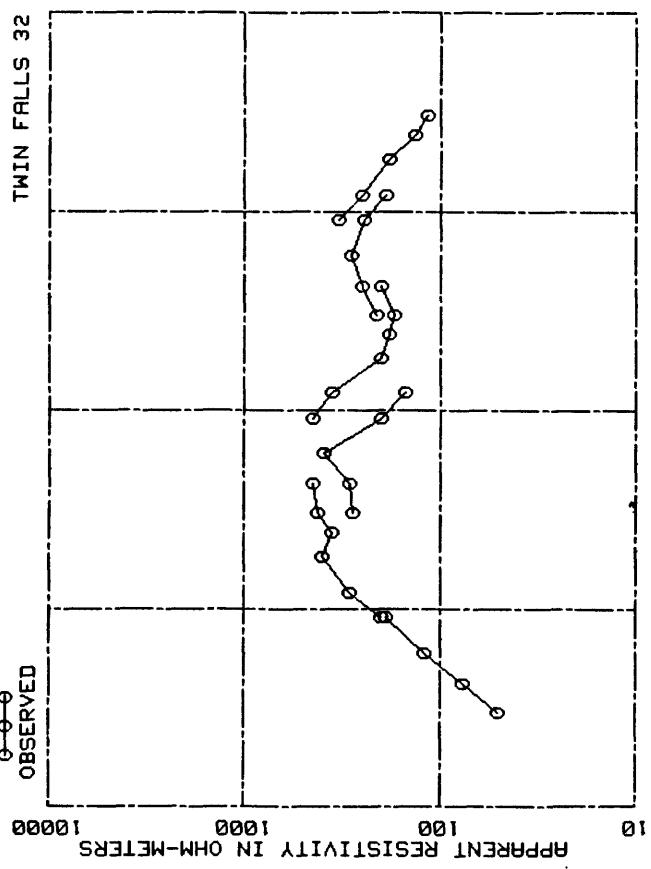
AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS	AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
3.85	400.00	91.44	900.00	.15	3129.22
4.27	535.00	121.92	800.00	.22	880.11
6.18	660.00	182.88	700.00	.32	273.71
9.14	922.00	243.84	565.00	.47	403.04
12.19	1060.00	304.80	440.00	.68	2351.41
9.14	1080.00	304.80	450.00	1.00	455.81
12.19	1260.00	426.72	250.00	1.47	85.77
18.29	1430.00	689.68	195.00	2.00	168.53
24.38	1680.00	914.40	137.00	2.84	326.46
30.48	1970.00	1219.20	104.00	4.29	47.47
42.67	1950.00	914.40	125.00	5.93	23.68
30.48	2320.00	1219.20	90.00	8.85	82.09
42.67	2230.00	1828.80	78.00	13.06	211.92
60.96	1580.00	2438.40	86.00		
91.44	1060.00	3048.00	99.00		
121.92	950.00	3657.60	113.00		
		4876.80	128.00		



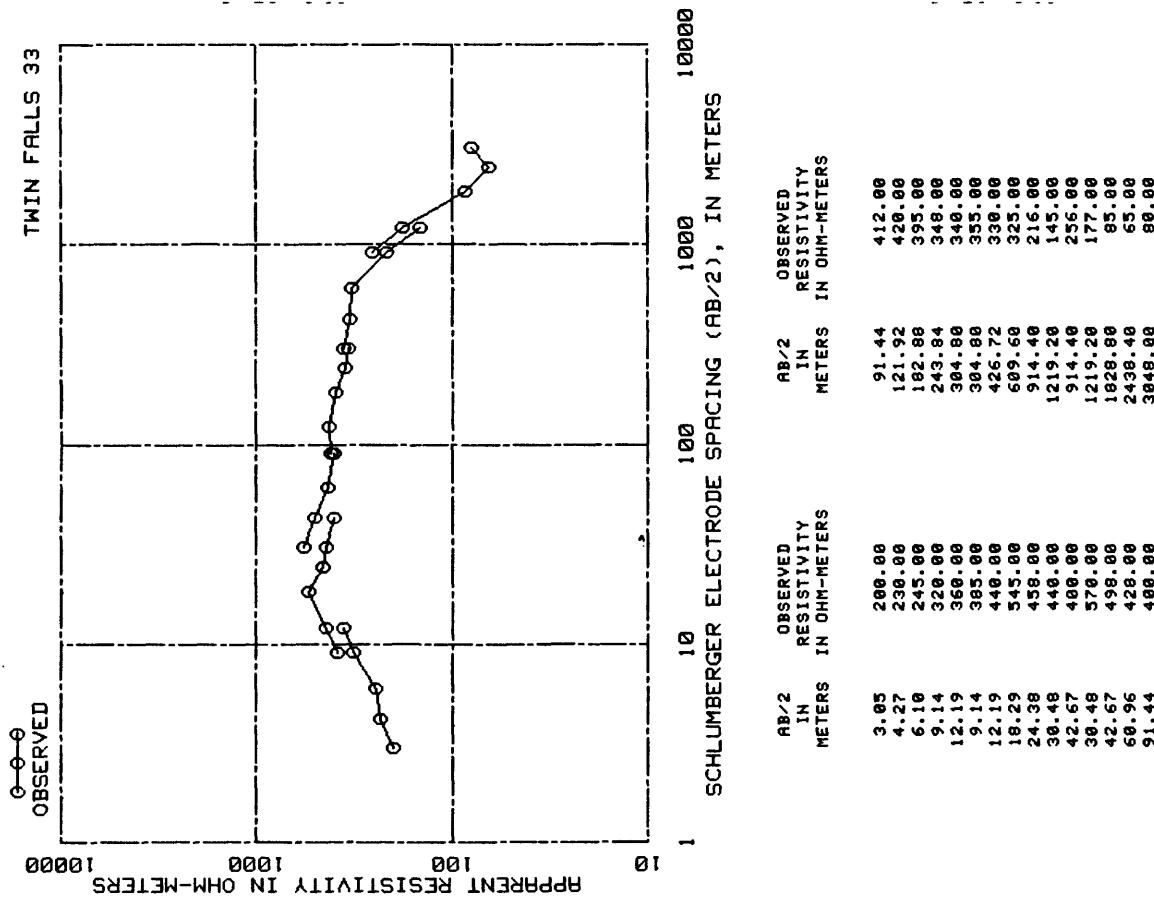
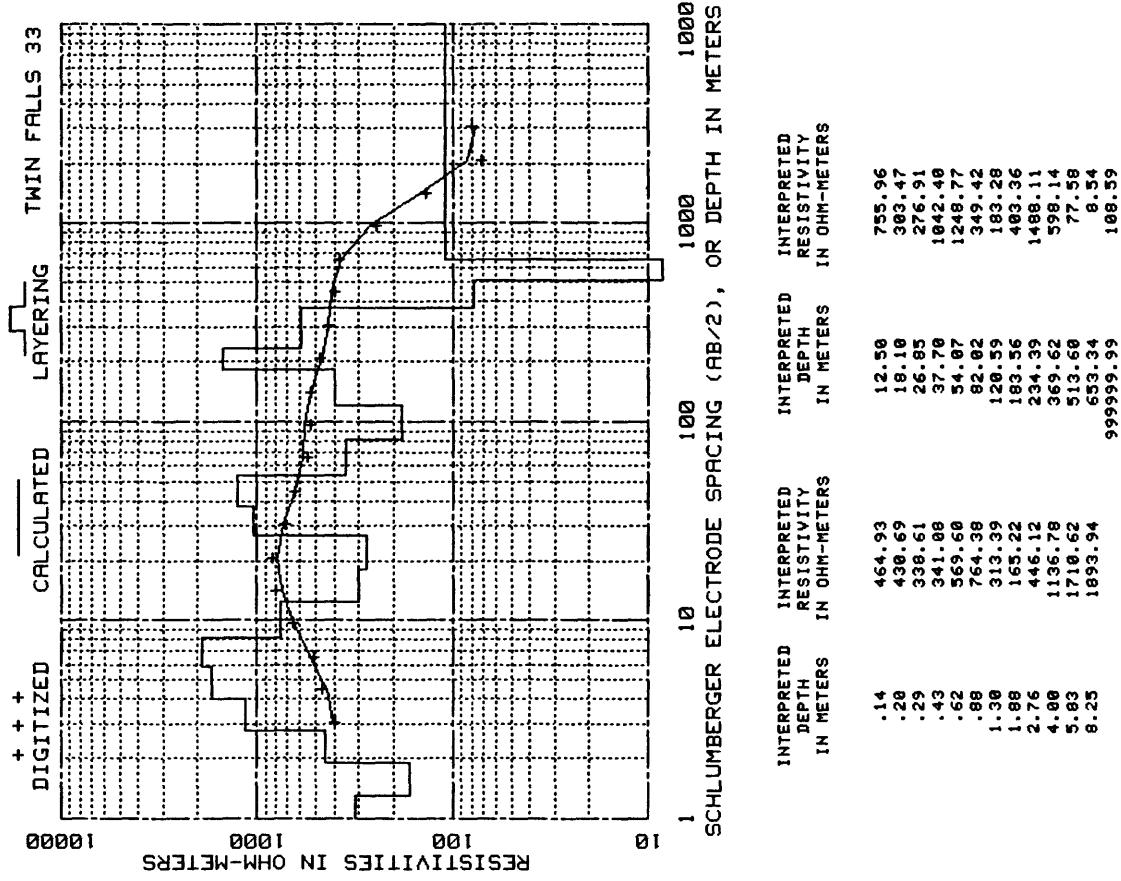


AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS	AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
3.05	1055.00	121.92	2000.00	.38	484.16	16.42	2888.10
4.27	1270.00	91.44	1740.00	.43	481.93	25.46	2708.76
6.10	1530.00	121.92	1260.00	.64	476.86	39.21	2412.15
9.14	1970.00	182.88	875.00	.93	467.61	59.36	1772.69
9.14	1880.00	243.84	690.00	1.37	470.49	87.35	1051.14
12.19	2220.00	304.80	600.00	2.01	534.72	126.56	659.01
18.29	3330.00	426.72	400.00	2.90	751.93	186.21	561.27
24.38	3420.00	609.60	305.00	4.01	1262.52	275.49	483.98
30.48	3740.00	304.80	745.00	5.37	2134.39	405.53	372.62
42.67	5000.00	426.72	470.00	7.34	2912.59	593.57	270.20
39.48	2610.00	609.60	380.00	10.71	3052.43	854.81	162.69
42.67	3600.00	914.40	285.00				133.24
66.96	2410.00	1219.20	220.00				
91.44	2580.00	1828.80	170.00				

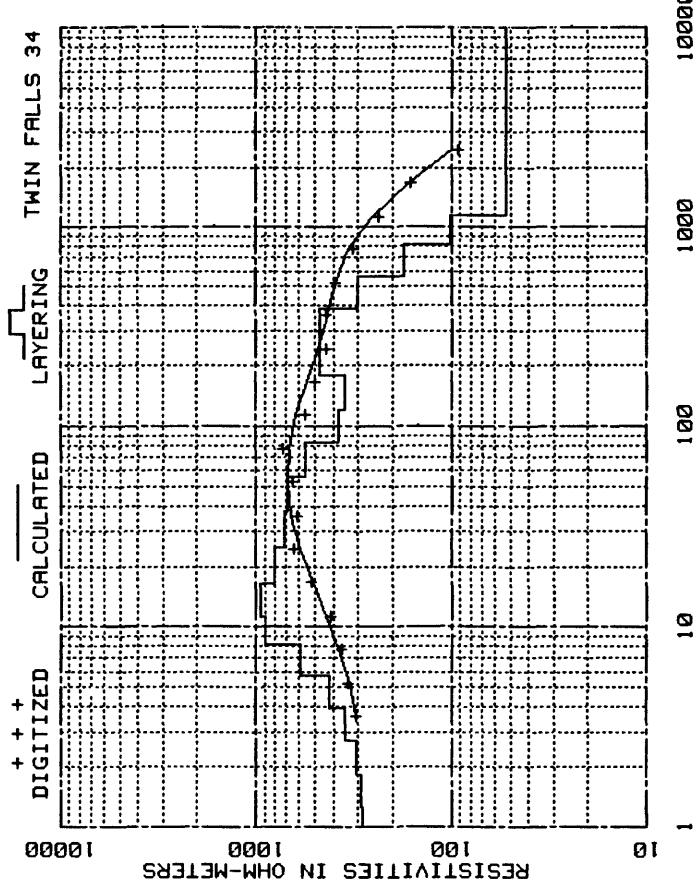
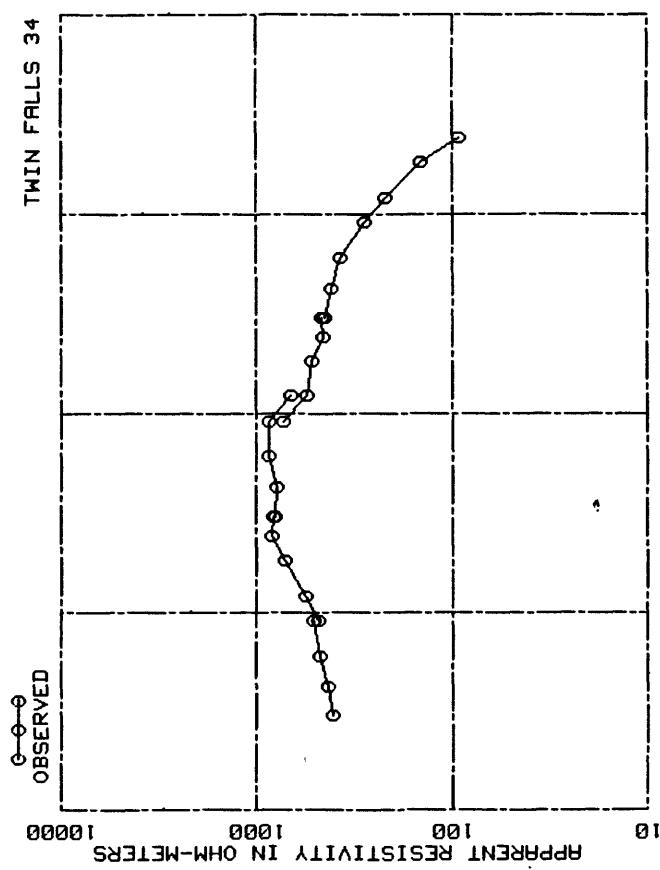


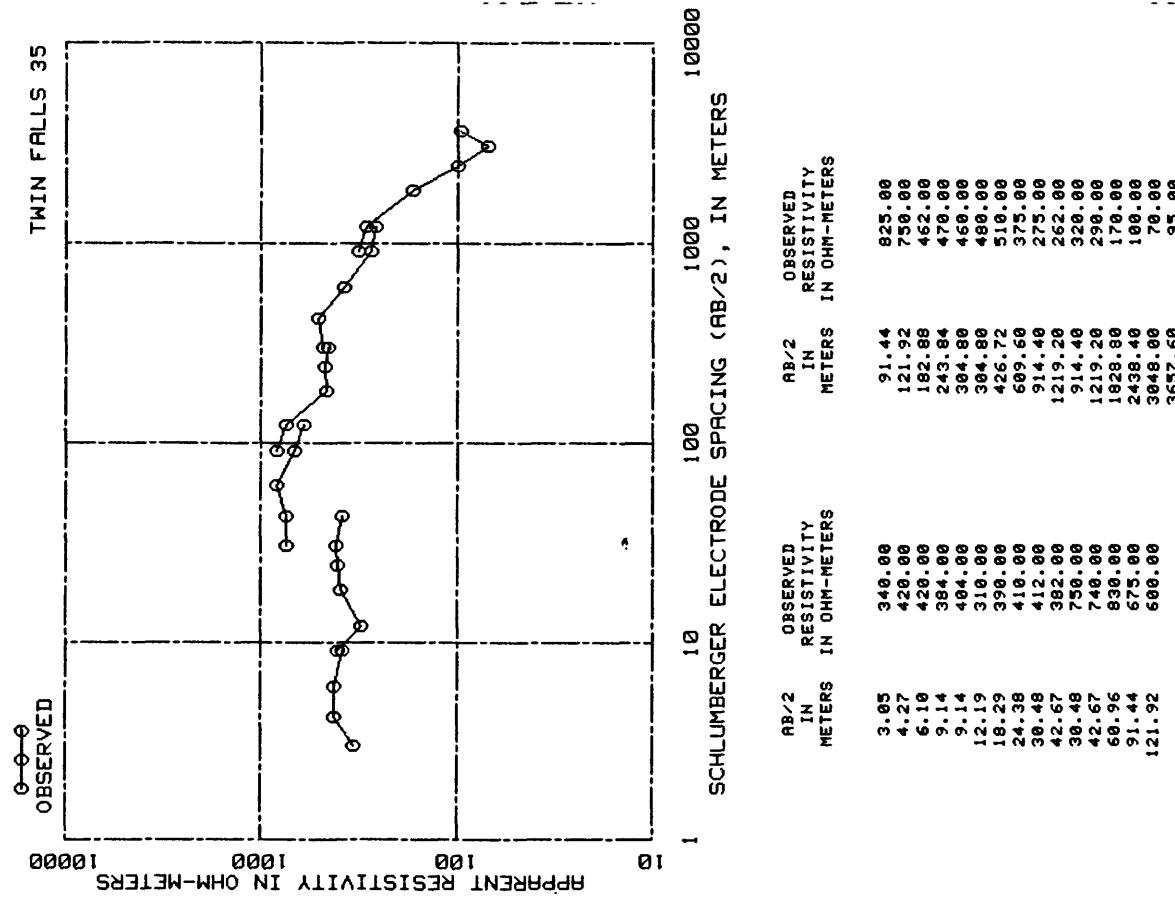
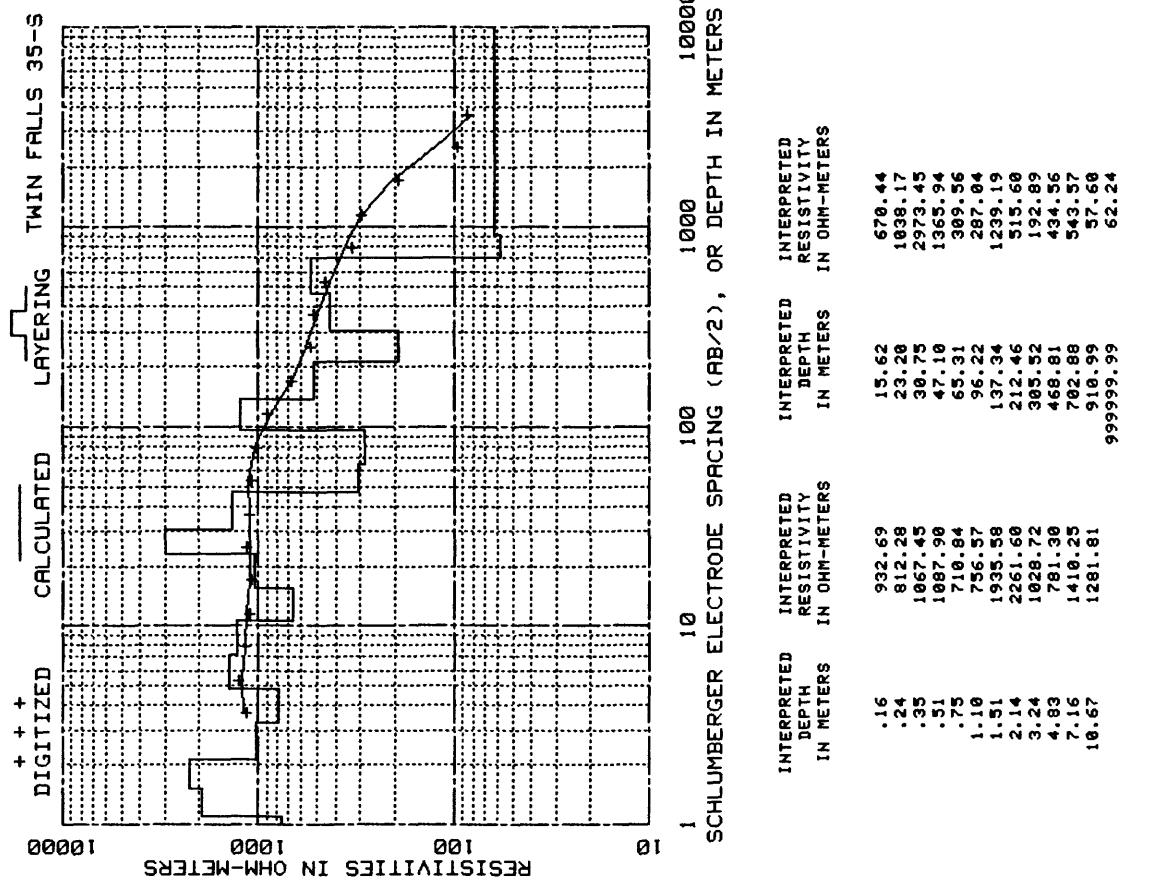


AB/2 IN METERS	OBSERVED RESISTIVITY IN OHMMETERS	OBSERVED RESISTIVITY IN OHMMETERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
3.05	91.44	448.00	.10	8.74
4.27	121.92	358.00	.15	13.33
6.10	182.88	209.00	.20	26.35
9.14	243.84	163.00	.31	1947.43
12.19	304.88	171.00	.45	567.44
16.29	426.72	260.00	.63	62.11
24.38	384.88	212.00	.89	29.88
30.48	426.72	258.00	1.29	247.04
42.67	609.60	285.00	1.92	648.55
30.48	420.00	285.00	2.85	187.70
42.67	914.40	245.00	4.23	1706.97
30.48	289.00	199.00	6.54	2552.06
42.67	299.00	339.00	3146.76	3146.76
60.95	1219.88	252.00		99999.99
91.44	208.00	180.00		92.30
121.92	158.00	135.00		
	3048.00	115.00		

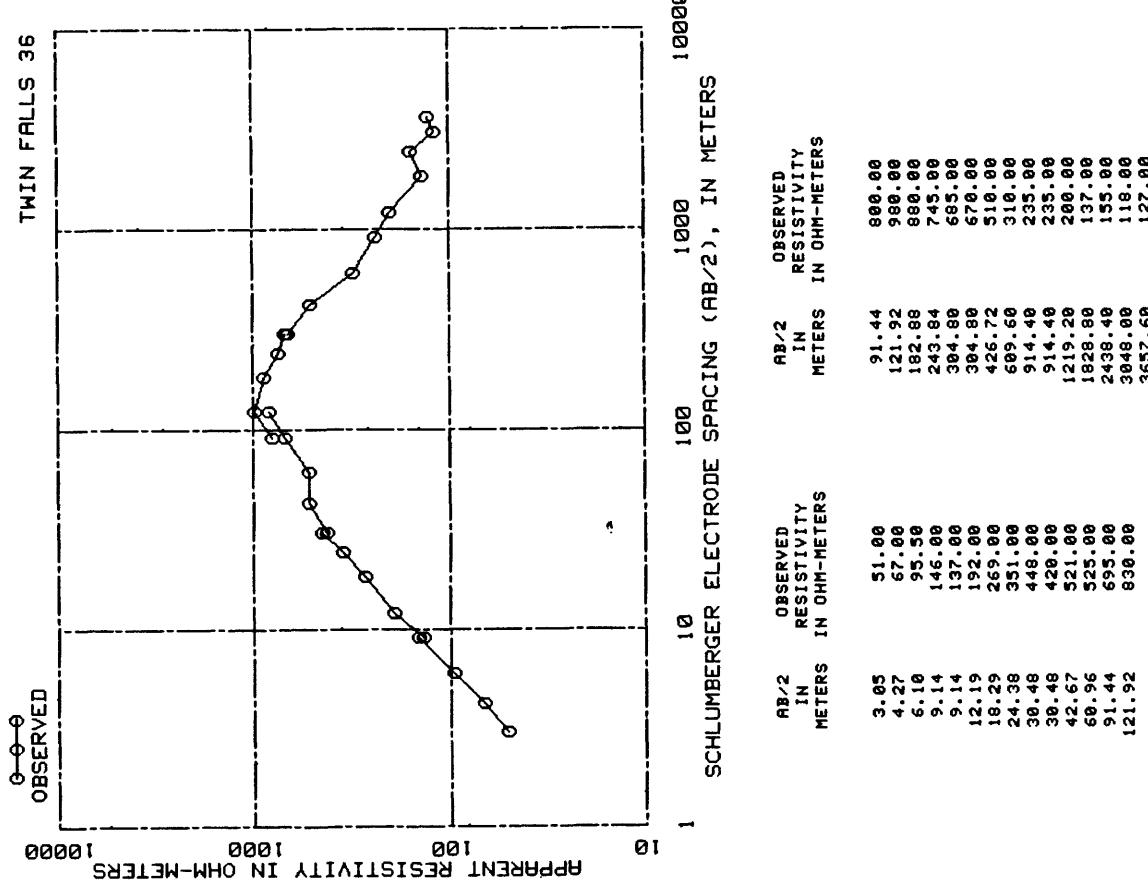
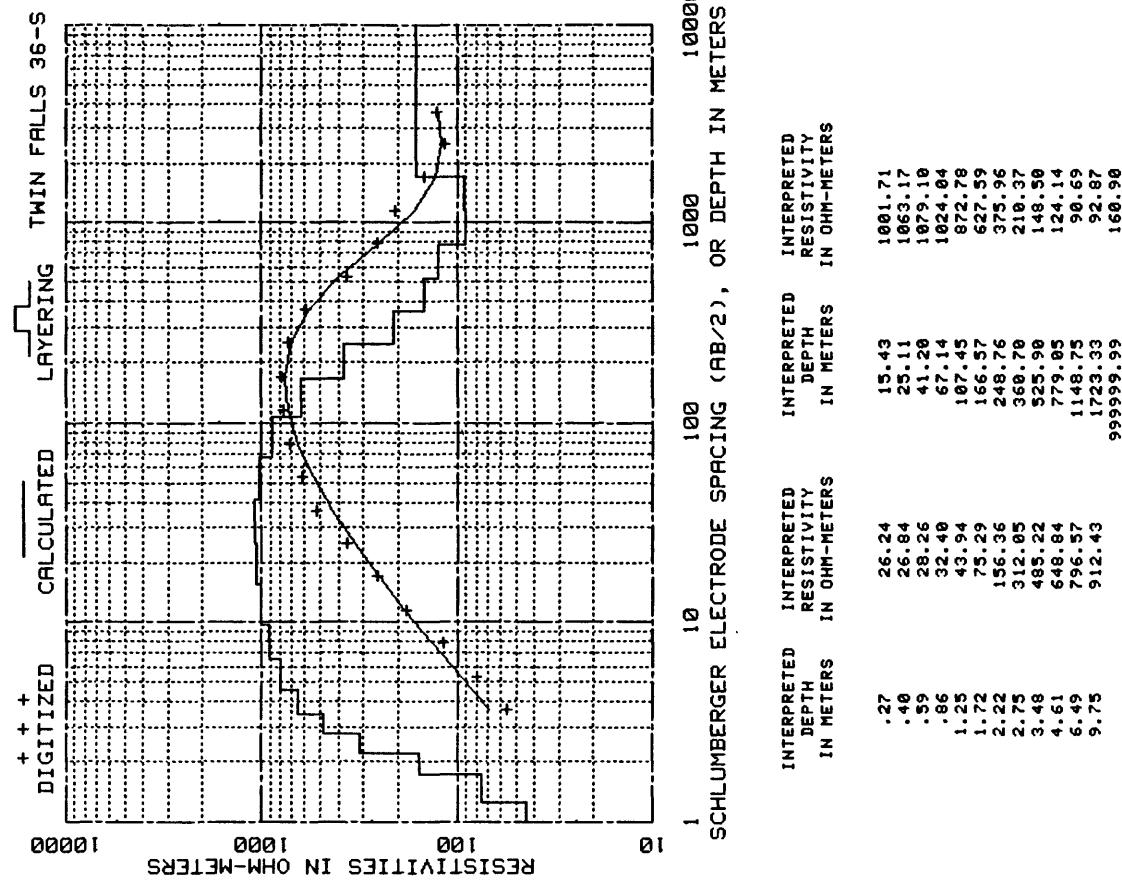


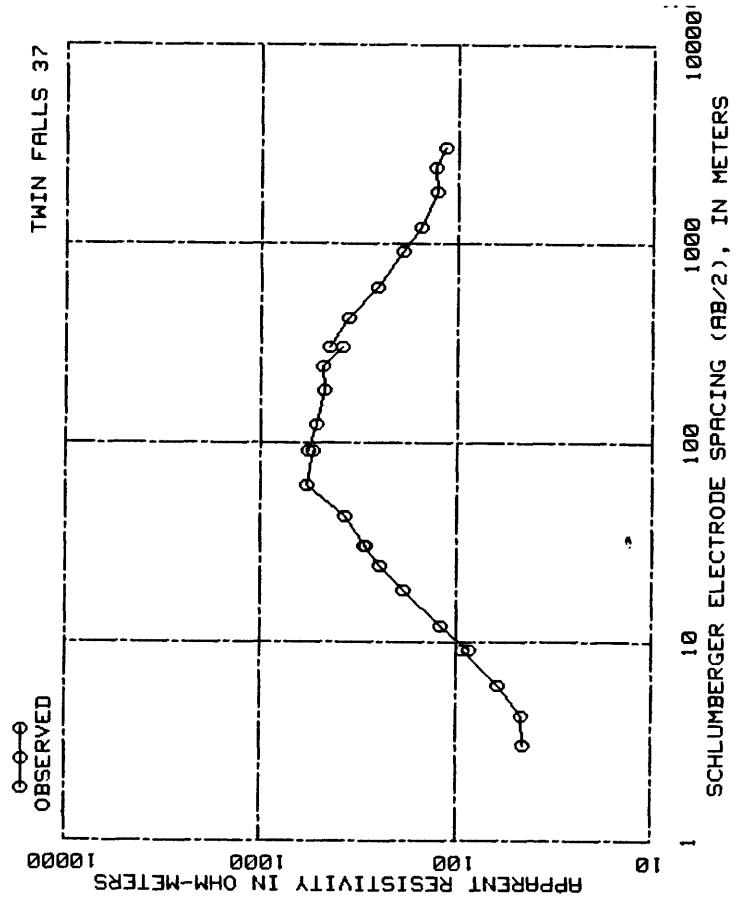
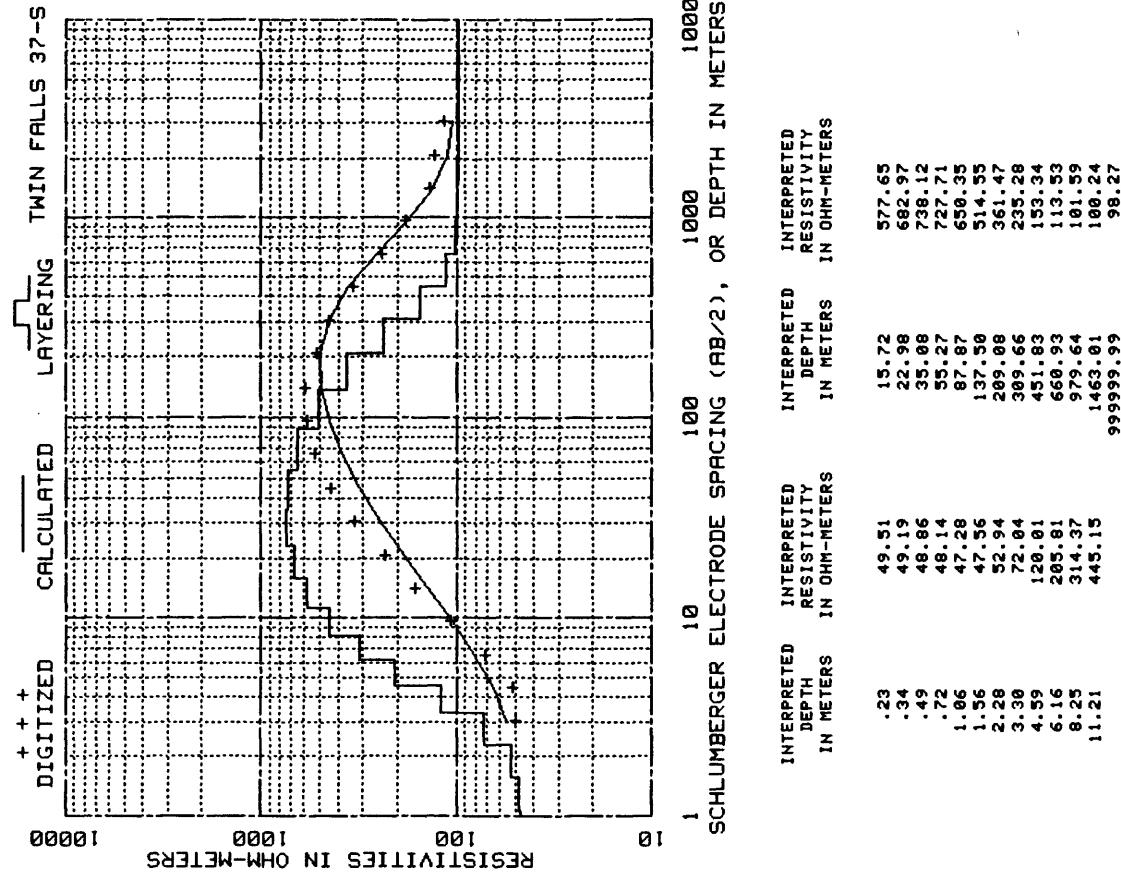
	AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS	AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
	3.05	288.00	91.44	412.00	.14	464.93	12.50	755.96
	4.27	230.00	121.92	420.00	.28	438.69	18.18	383.47
	6.10	245.00	182.88	395.00	.29	338.61	26.85	276.91
	9.14	326.00	243.84	349.00	.43	341.08	37.70	1042.48
	12.19	360.00	304.88	340.00	.62	569.68	54.87	1248.77
	9.14	385.00	304.88	355.00	.62	764.38	62.02	319.42
	12.19	440.00	426.72	330.00	.88			
	18.29	545.00	689.69	325.00	1.30	313.39	128.59	183.28
	24.38	458.00	914.48	215.00	1.88	165.22	163.56	480.36
	30.48	440.00	1219.28	145.00	2.76	446.12	234.39	1488.11
	42.67	400.00	914.48	256.00	4.98	1136.78	369.62	598.14
	30.48	570.00	1219.28	177.00	5.83	1710.62	513.60	77.58
	42.67	498.00	1828.88	85.00	6.25	1893.94	653.34	8.54
	60.96	428.00	2438.48	65.00				
	91.44	400.00	3848.00	90.00				
								999999.99
								188.59

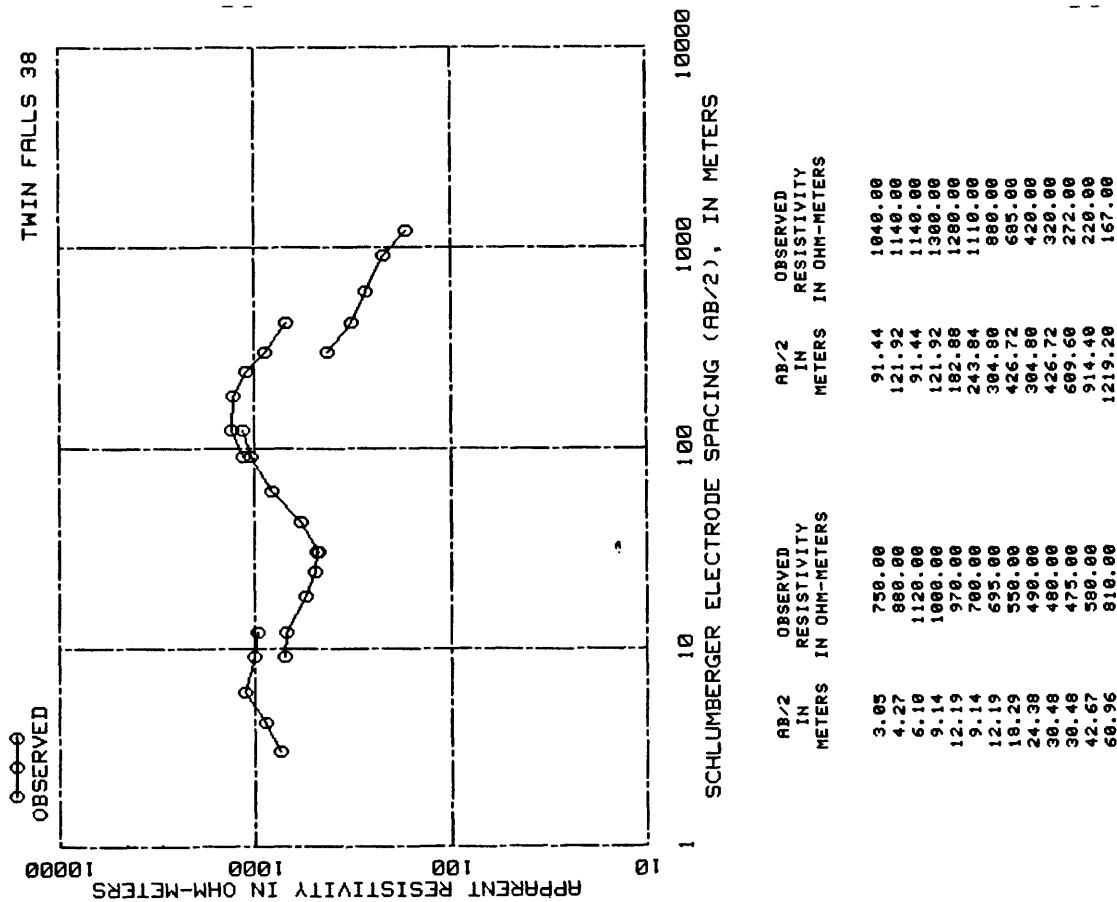
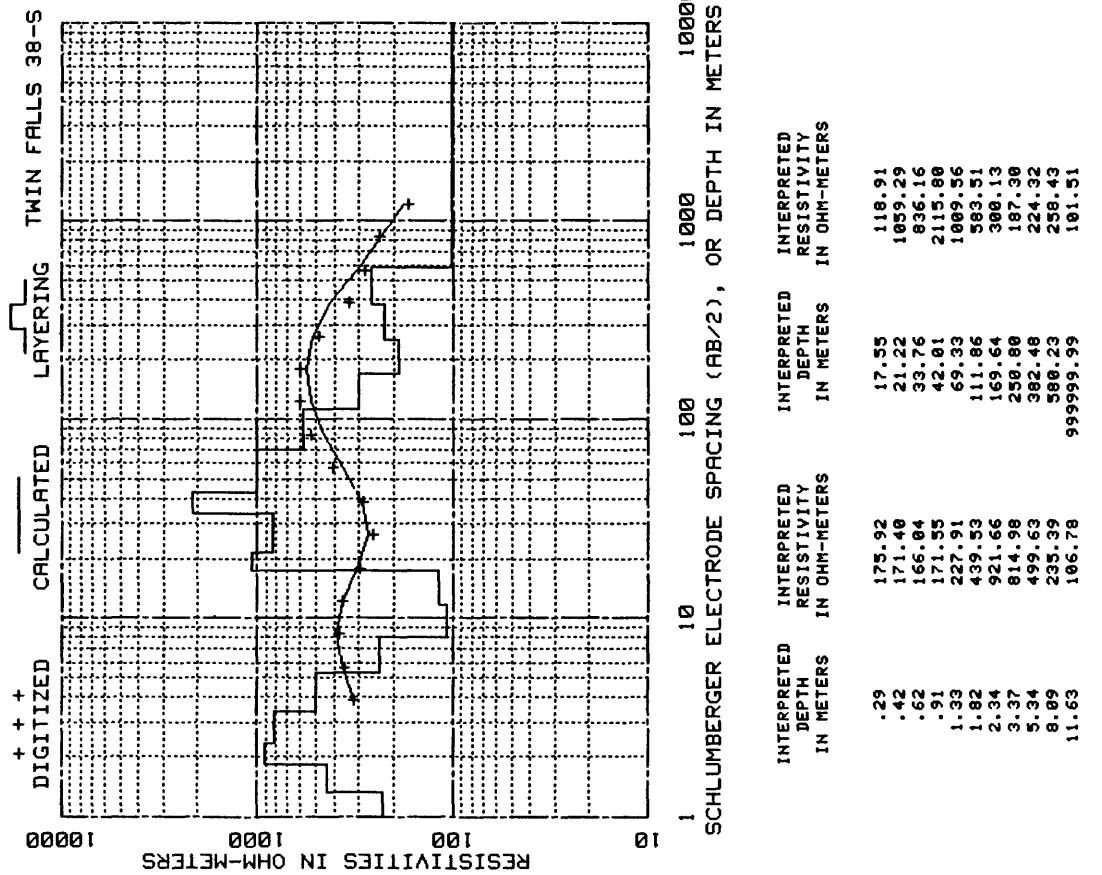


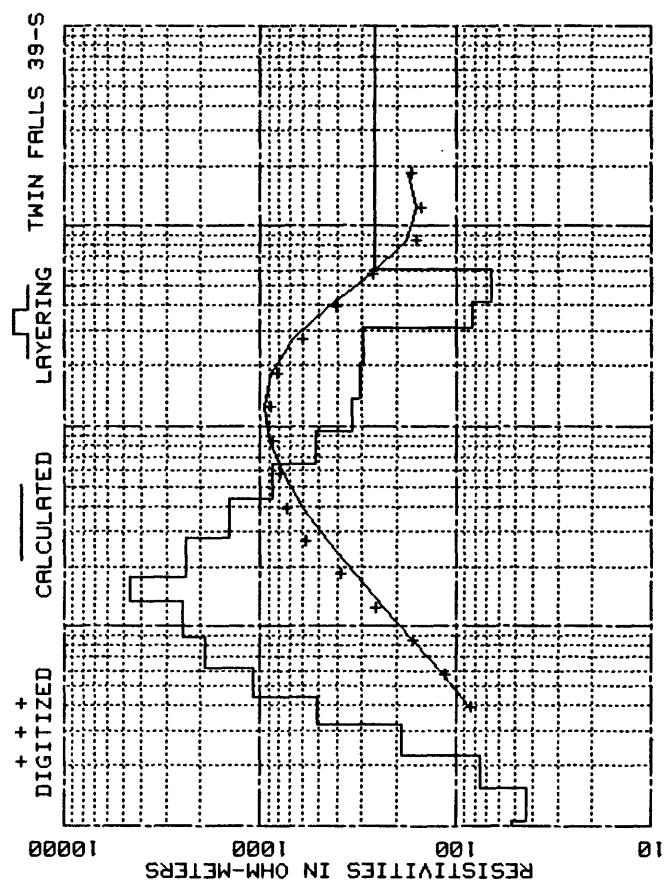


AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS	AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS		INTERPRETED RESISTIVITY IN OHM-METERS
				INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	
3.85	340.00	91.44	825.00	.16	932.69	15.62
4.27	420.00	121.92	750.00	.24	812.28	23.28
6.10	420.00	182.88	452.00	.35	1067.45	38.75
9.14	384.00	243.84	47.00	.51	1087.90	47.10
9.14	404.00	304.80	460.00	.75	710.84	65.31
12.19	310.00	304.80	480.00	1.10	736.57	96.22
18.29	390.00	426.72	51.00	1.51	1935.58	137.34
24.38	410.00	609.60	375.00	2.14	2261.60	212.46
30.48	412.00	914.40	271.00	3.24	1028.72	35.52
42.67	382.00	1219.20	262.00	4.83	781.30	468.81
30.48	750.00	914.40	320.00	7.16	1410.25	702.88
42.67	740.00	1219.20	290.00	10.67	1281.81	57.68
60.96	830.00	1828.80	170.00			910.99
91.44	675.00	2438.40	100.00			62.24
121.92	600.00	3848.00	70.00			999999.99
		3657.60	50.00			

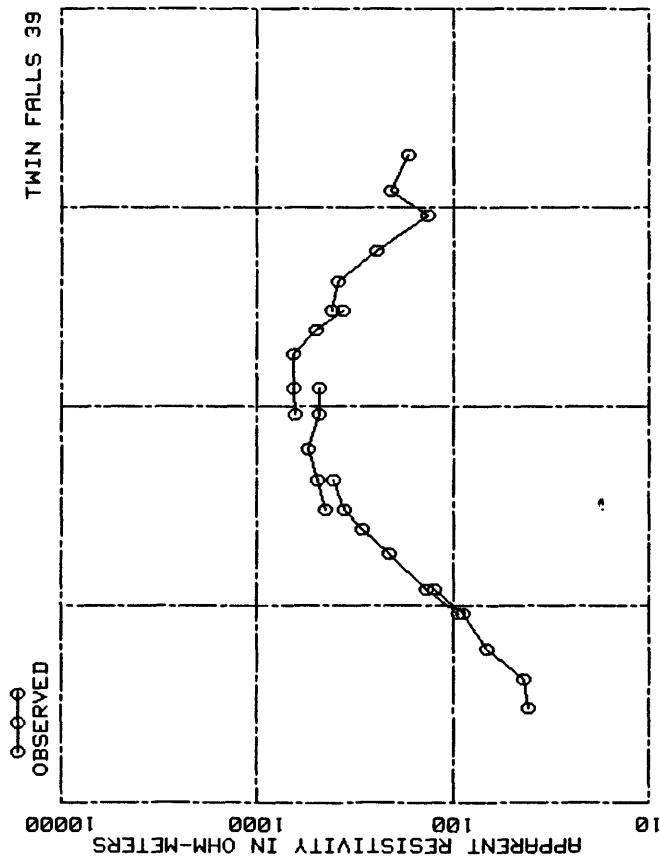




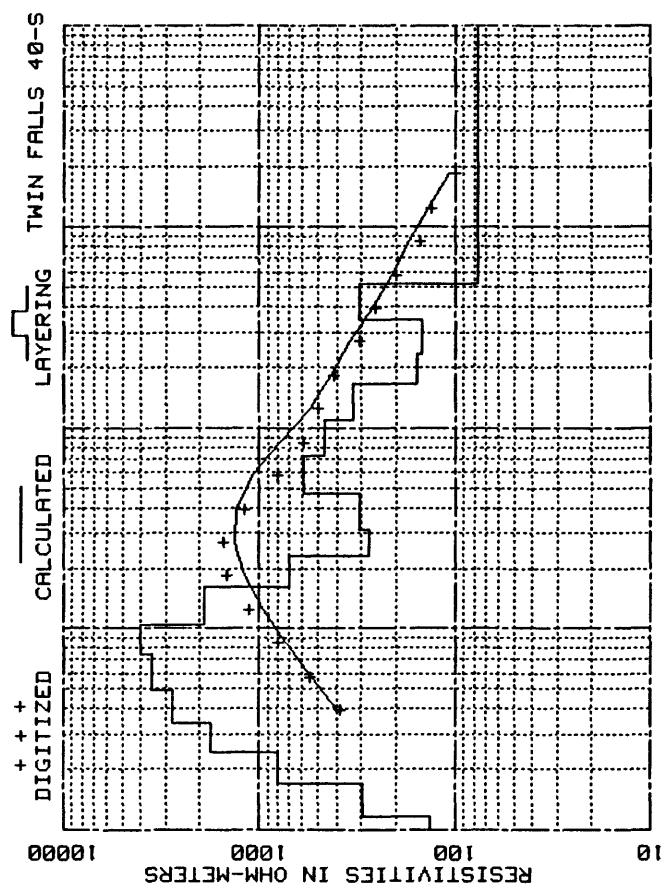




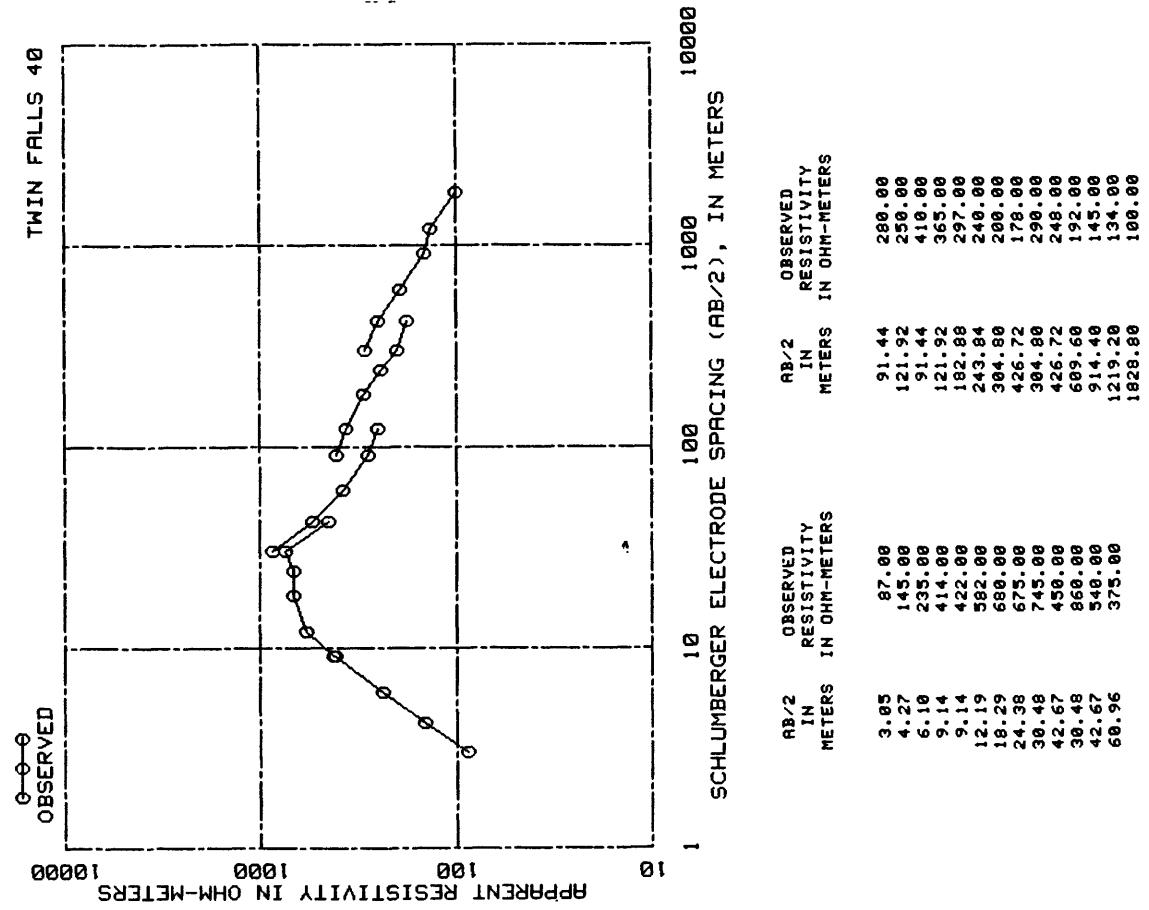
	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
.23	53.18	13.45	2475.29	
.33	51.09	17.69	4562.42	
.49	53.58	22.92	2384.41	
.72	57.72	43.37	1448.38	
1.05	51.48	64.83	868.34	
1.54	43.15	94.56	515.65	
2.23	75.25	137.36	337.56	
3.28	189.06	204.62	318.18	
4.43	512.18	366.91	29.39	
6.20	1088.72	418.38	82.40	
8.89	1916.68	685.23	65.44	
				257.33
				999999.99

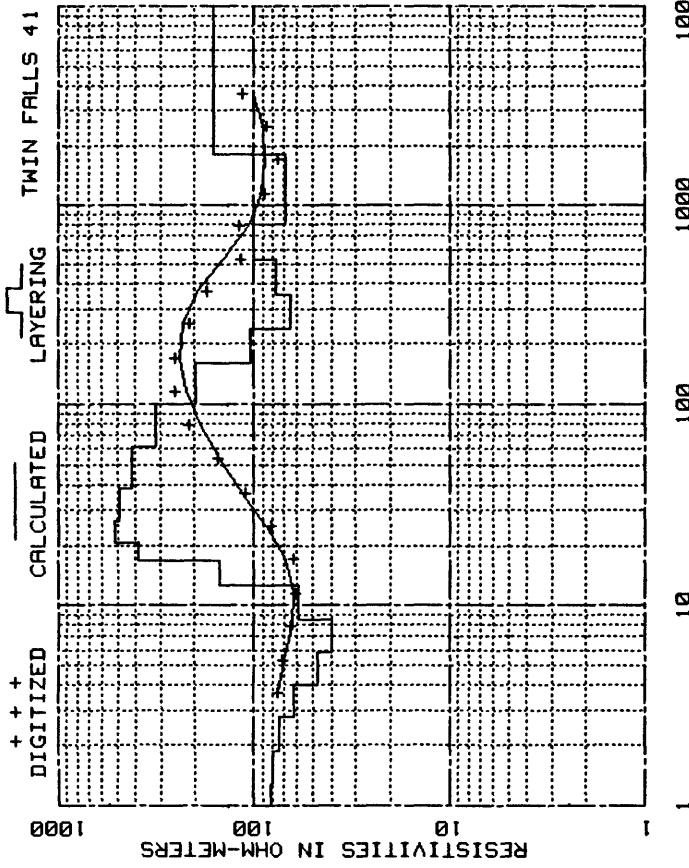


AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS	AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS
3.05	41.00	60.96	550.00
4.27	43.50	91.44	480.00
6.10	67.00	121.92	482.00
9.14	89.00	91.44	640.00
12.19	124.00	121.92	650.00
9.14	94.00	182.88	650.00
12.19	136.50	243.84	505.00
18.29	212.00	365.00	365.00
24.38	290.00	384.88	412.00
30.48	360.00	426.72	385.00
42.67	410.00	609.60	245.00
38.48	450.00	914.40	135.00
42.67	495.00	1219.28	207.00
		1828.88	170.00

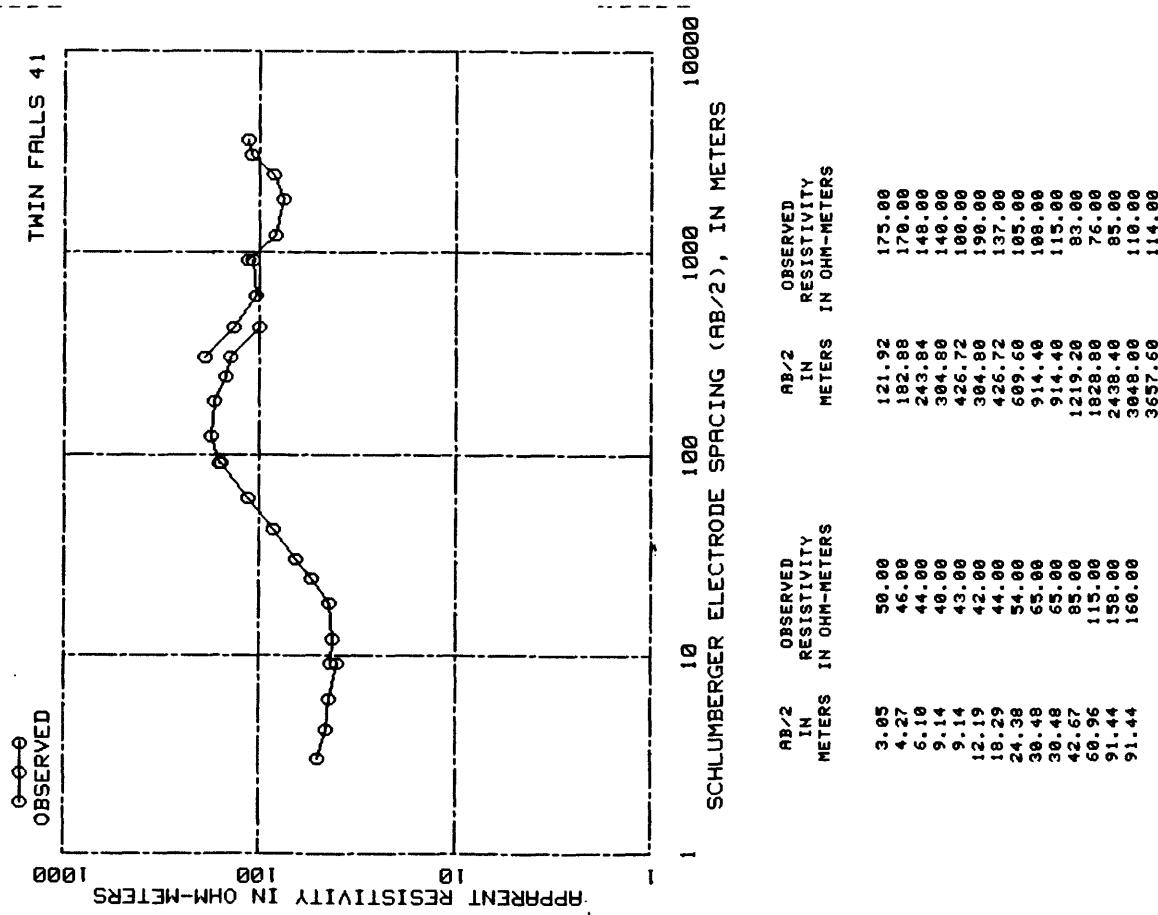


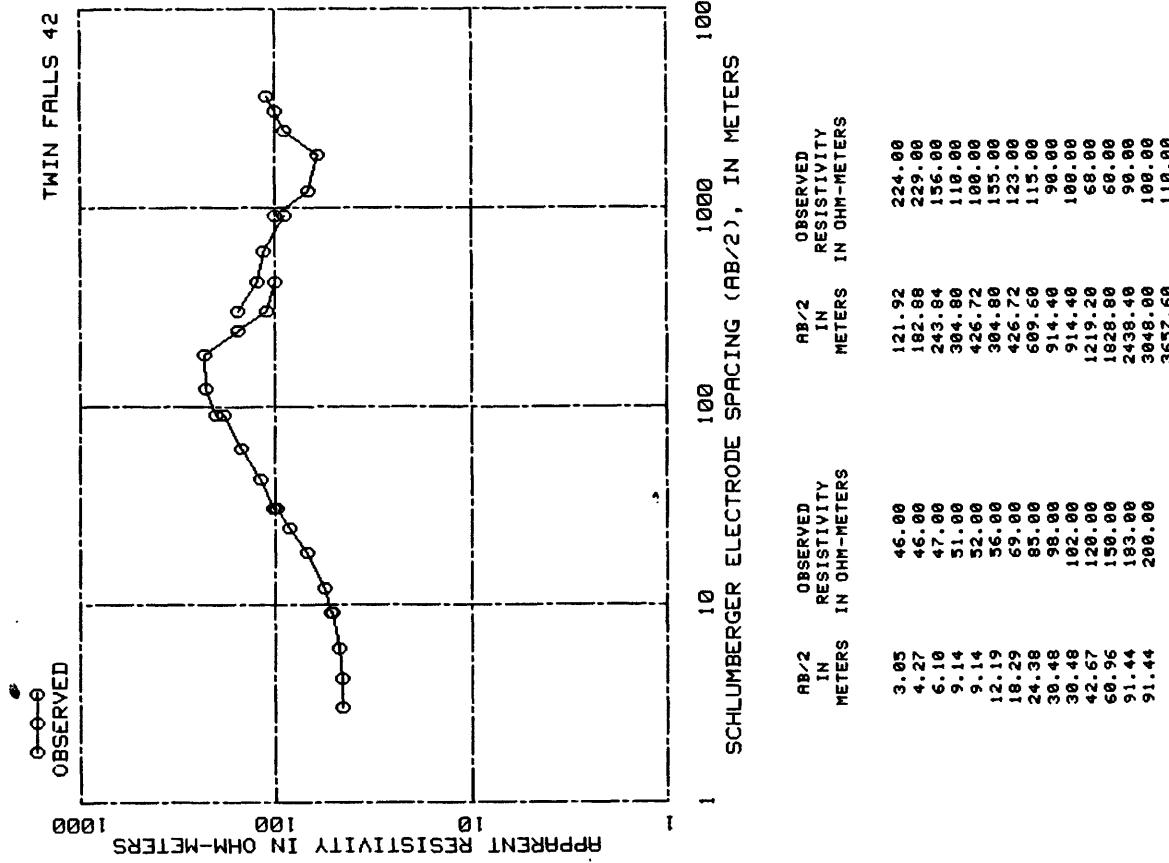
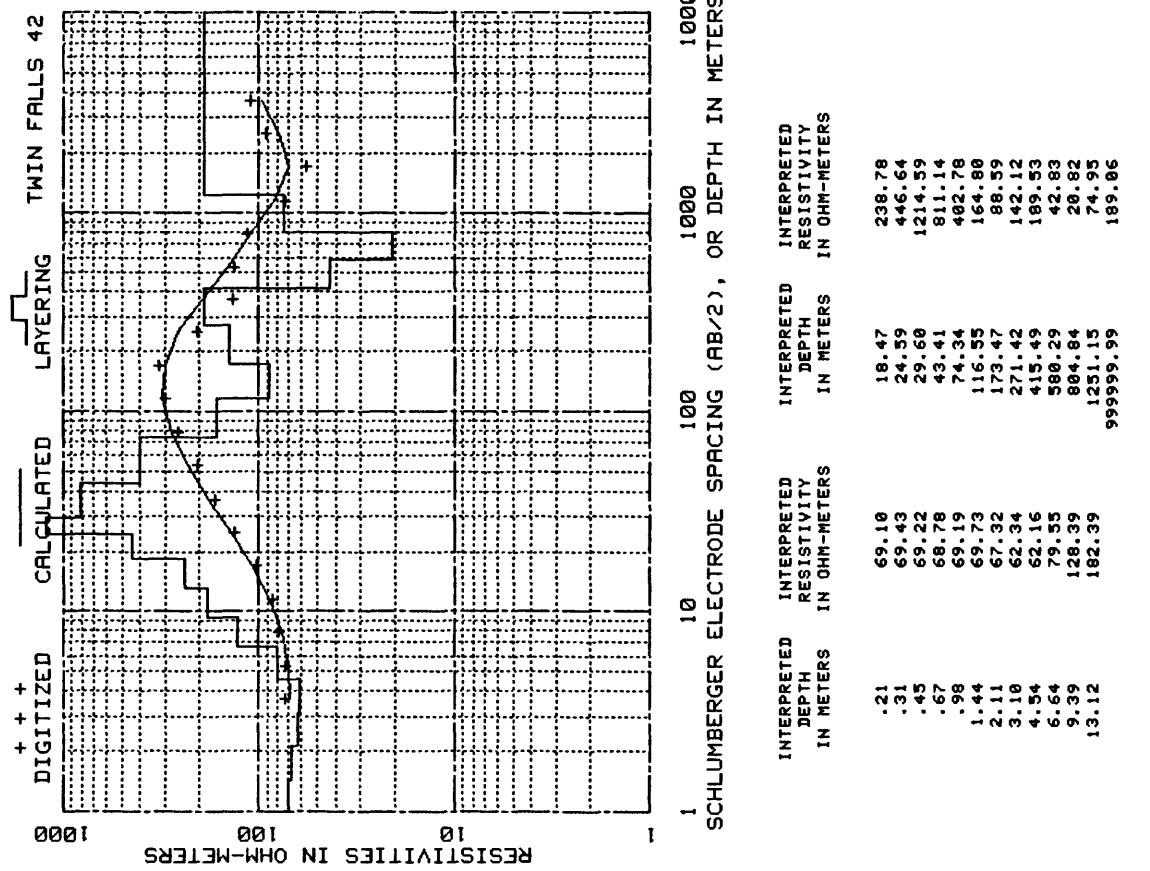
SCHLUMBERGER ELECTRODE SPACING (AB/2), OR DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
10	.17	230.51	10.57
26	.26	177.79	16.10
37	.37	255.79	22.96
54	.54	344.03	697.85
80	.80	289.57	31.37
116	1.16	133.95	273.60
168	1.68	297.99	47.10
240	2.40	79.71	308.53
343	3.43	1774.59	588.33
467	4.67	2755.57	467.05
646	6.46	4.93	316.81
914	9.14	7.41	35337.98
1349	13.49		518.53
1929	19.29		99999.99
2719	27.19		76.51
3799	37.99		
5298	52.98		
7647	76.47		
10926	109.26		
16286	162.86		
23924	239.24		
34386	343.86		
48581	485.81		
68000	680.00		
96000	960.00		
144000	144.00		
216000	216.00		
324000	324.00		
486000	486.00		
729000	729.00		
1098000	1098.00		
1647000	1647.00		
2470000	2470.00		
3705000	3705.00		
5557500	5557.50		
8336250	8336.25		
12504375	12504.375		
18756562	18756.562		
27634843	27634.843		
41452265	41452.265		
62178398	62178.398		
93267597	93267.597		
140000000	140000.000		

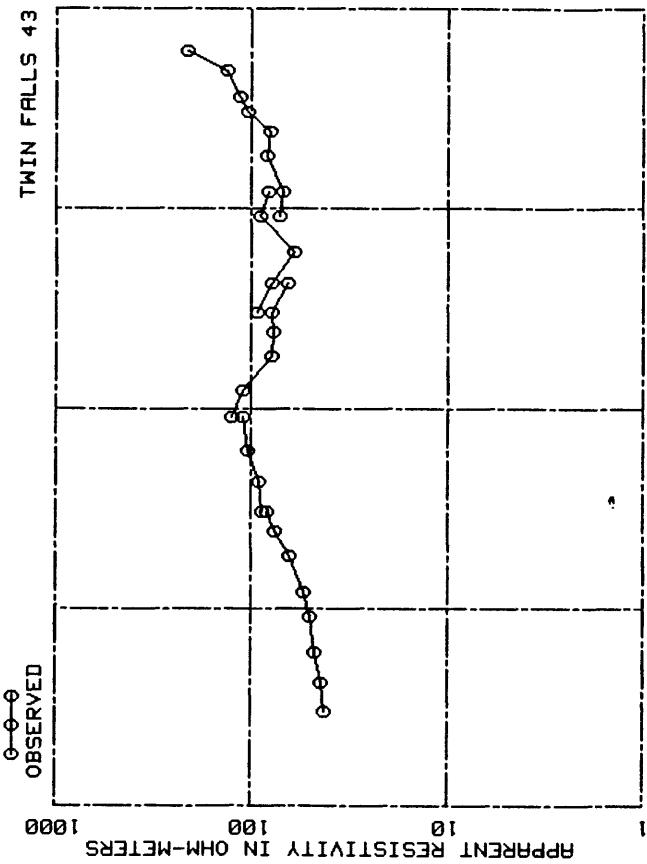




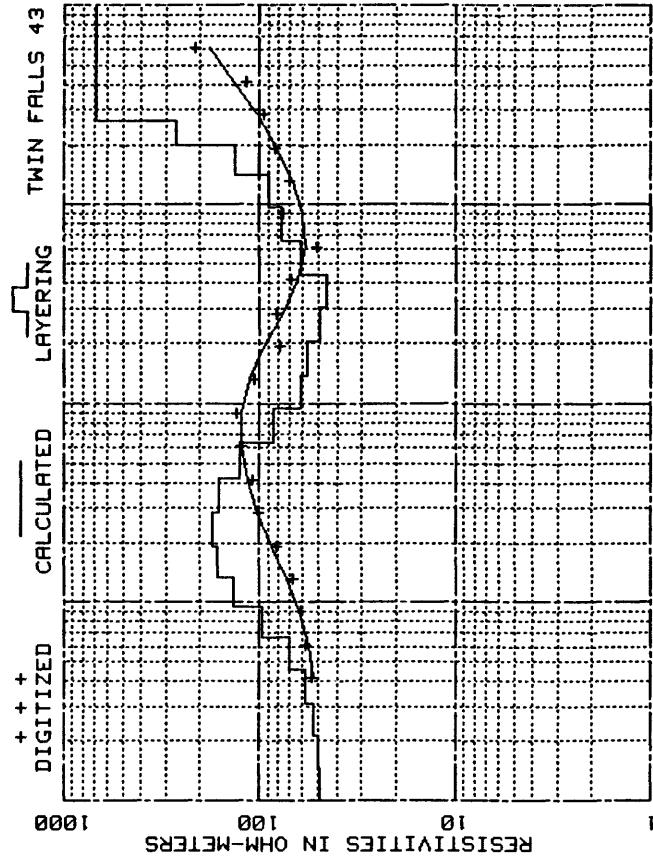
SCHLUMBERGER ELECTRODE SPACING (AB/2), OR DEPTH IN METERS			
	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED RESISTIVITY IN OHM-METERS
.27	80.31	26.70	385.81
.48	80.49	26.53	514.69
.59	80.74	38.26	487.95
.87	81.13	61.10	416.40
1.27	81.40	100.70	317.21
1.87	80.35	159.56	197.12
2.74	75.01	233.38	105.02
4.92	62.69	351.46	64.94
5.85	47.20	53.39	77.88
8.54	48.26	810.75	100.46
12.58	59.76	1207.05	68.55
16.92	149.19	1797.05	69.23
		99999.99	161.74



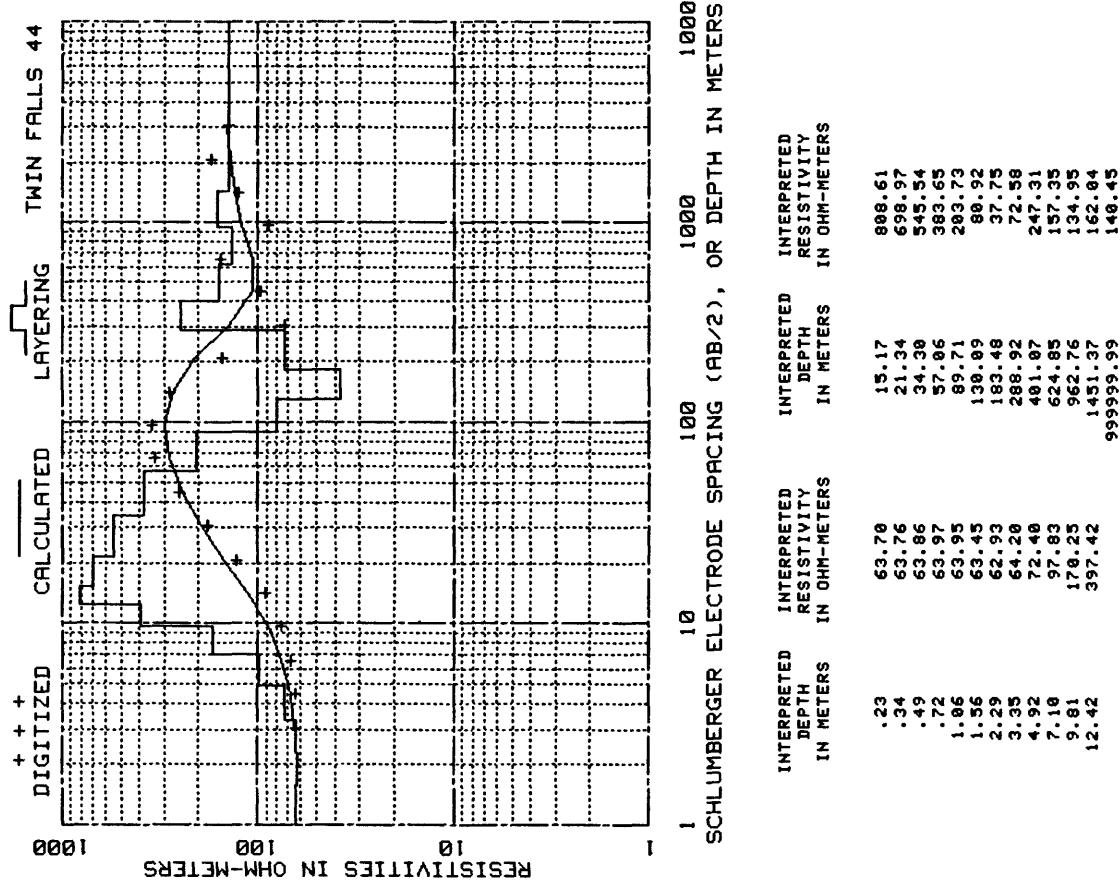
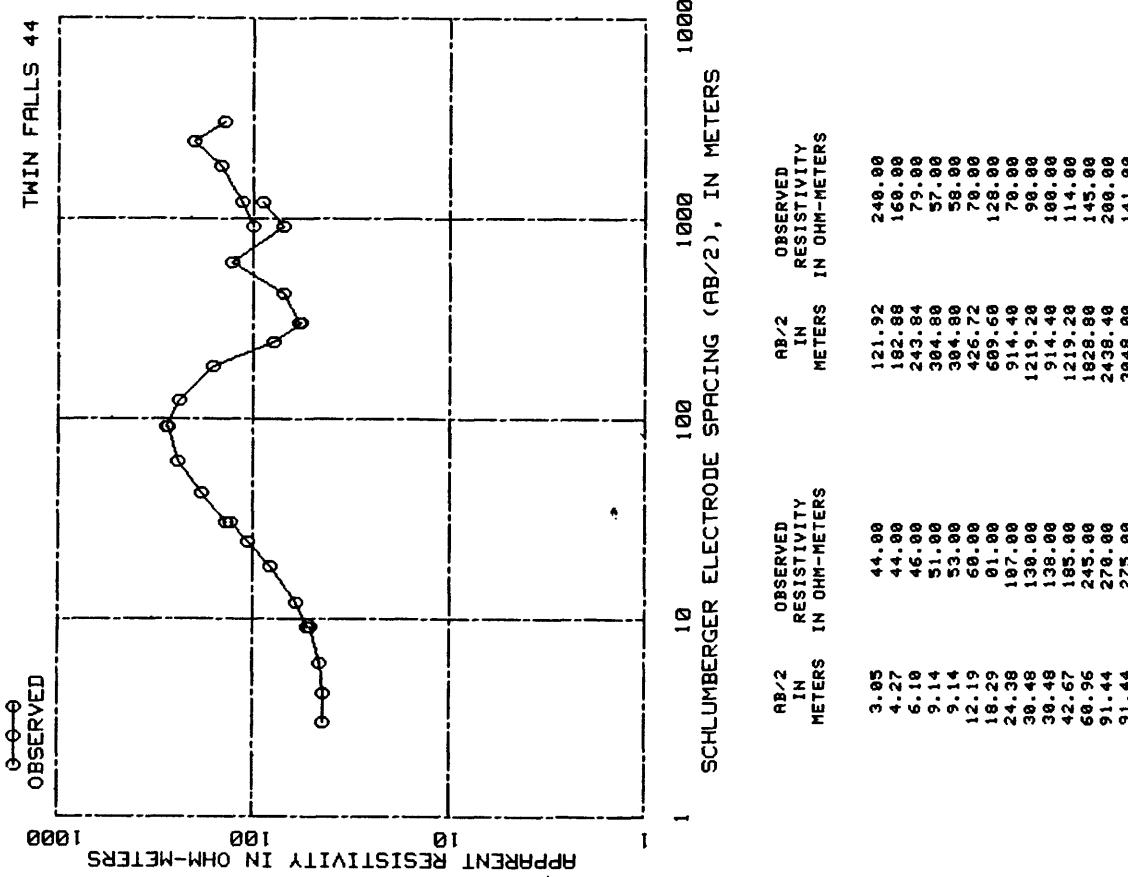


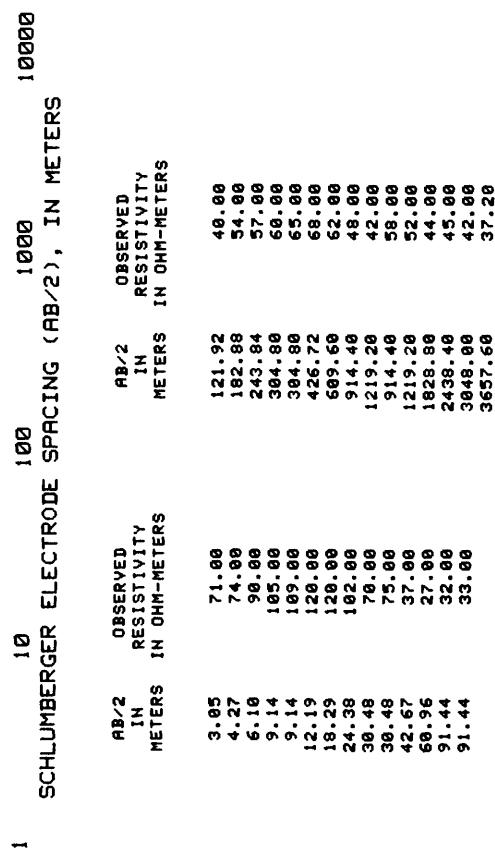
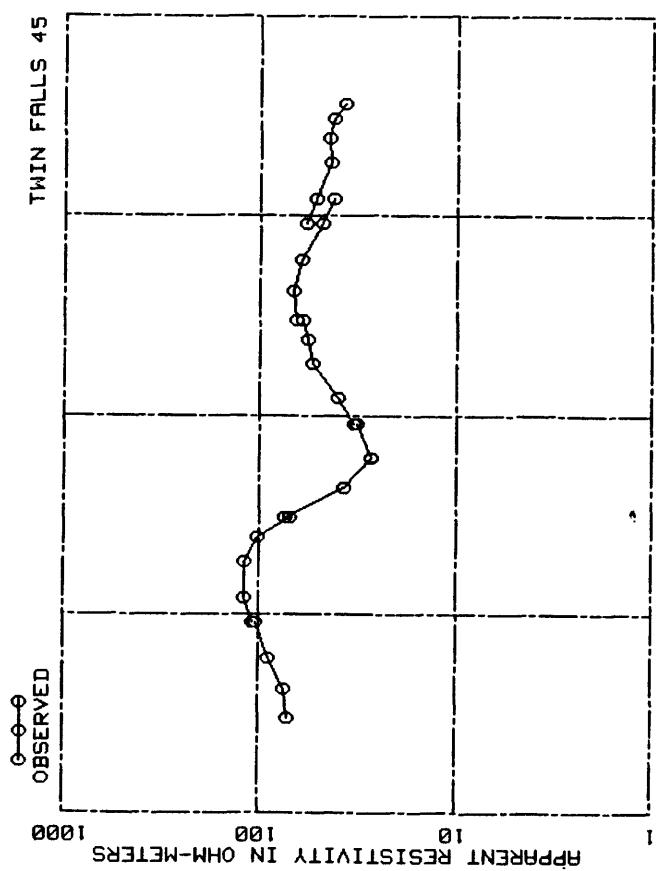
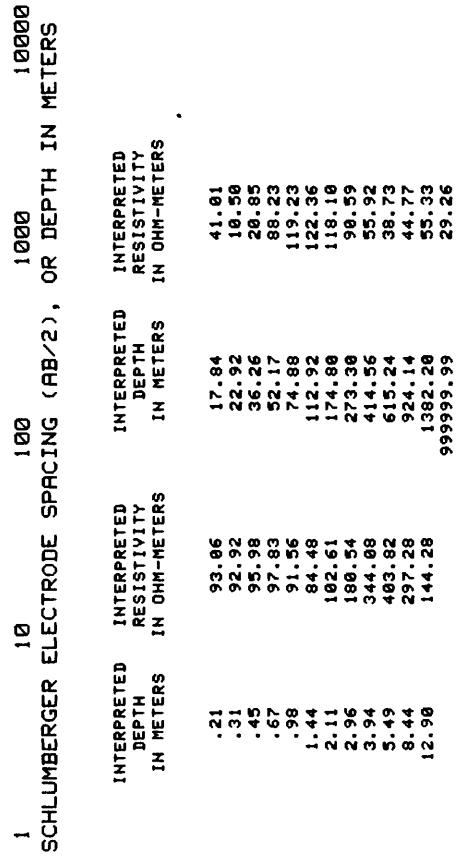
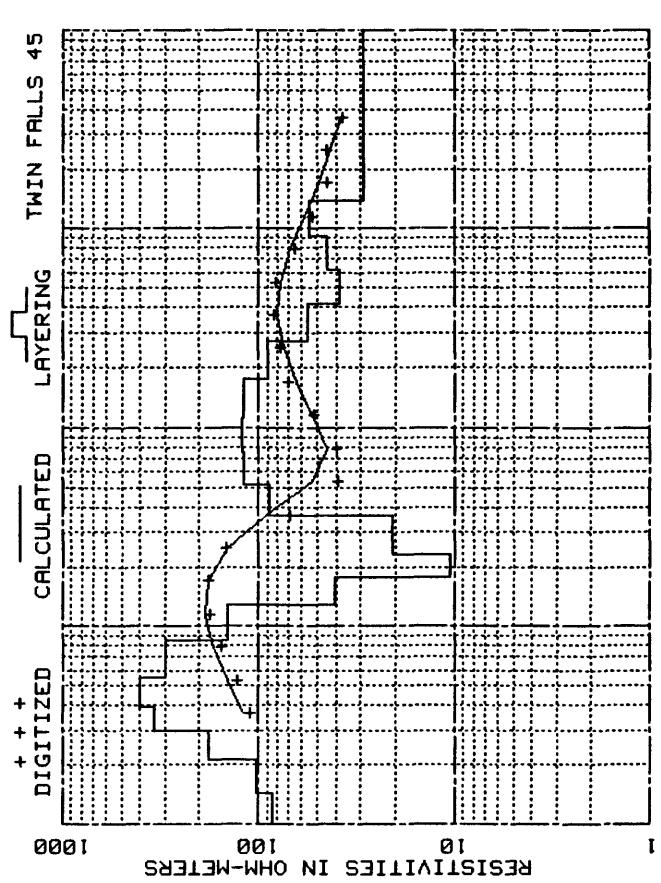


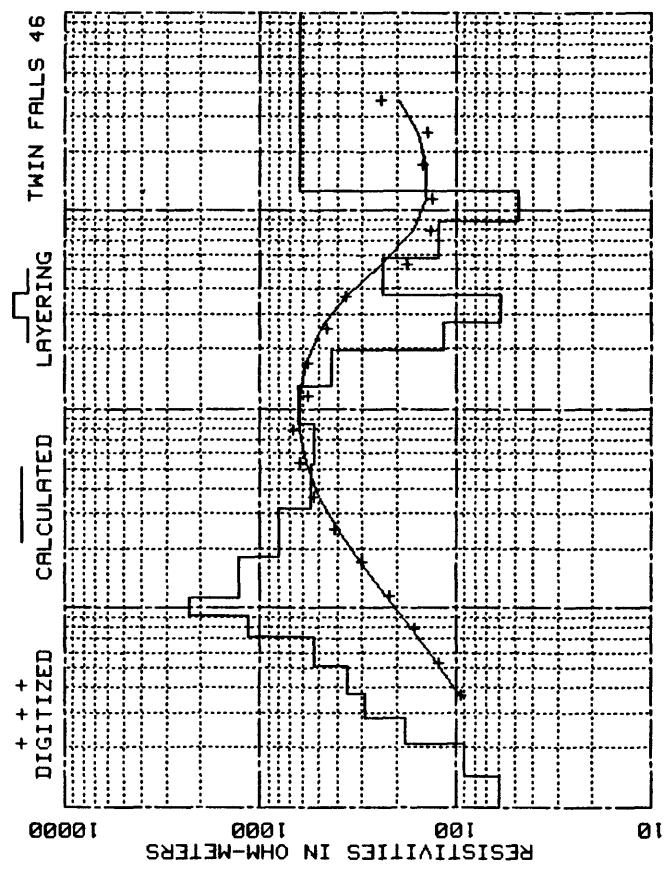
AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS	AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS
3.05	42.00	243.84	77.00
4.27	44.00	304.90	79.00
6.10	47.00	426.72	65.00
9.14	50.00	304.80	93.00
9.14	50.00	426.72	79.00
12.19	54.00	609.60	60.00
18.29	64.00	914.40	90.00
24.38	76.00	1219.20	81.00
30.48	84.00	914.40	72.00
30.48	88.00	1219.20	69.00
42.67	92.00	1828.80	84.00
60.96	105.00	2438.40	80.00
91.44	116.00	3048.90	105.00
91.44	125.00	3657.60	115.00
121.92	118.00	4876.90	133.00
182.88	78.00	6096.00	215.00



SCHLUMBERGER ELECTRODE SPACING (AB/2), OR DEPTH IN METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED RESISTIVITY IN OHM-METERS
.31	.31	49.48	42.36
.46	.46	49.30	63.74
.67	.67	49.98	94.37
.98	.98	48.92	84.52
1.45	1.45	48.90	130.31
2.12	2.12	49.88	62.18
3.11	3.11	48.43	56.64
52.58	52.58	44.35	49.36
58.32	58.32	45.58	45.58
652.97	652.97	61.14	61.14
6.64	6.64	76.78	77.10
9.58	9.58	97.36	97.36
13.42	13.42	1487.25	89.91
135.89	135.89	1999.98	133.67
162.79	162.79	2653.11	269.15
171.83	171.83	99999.99	682.26

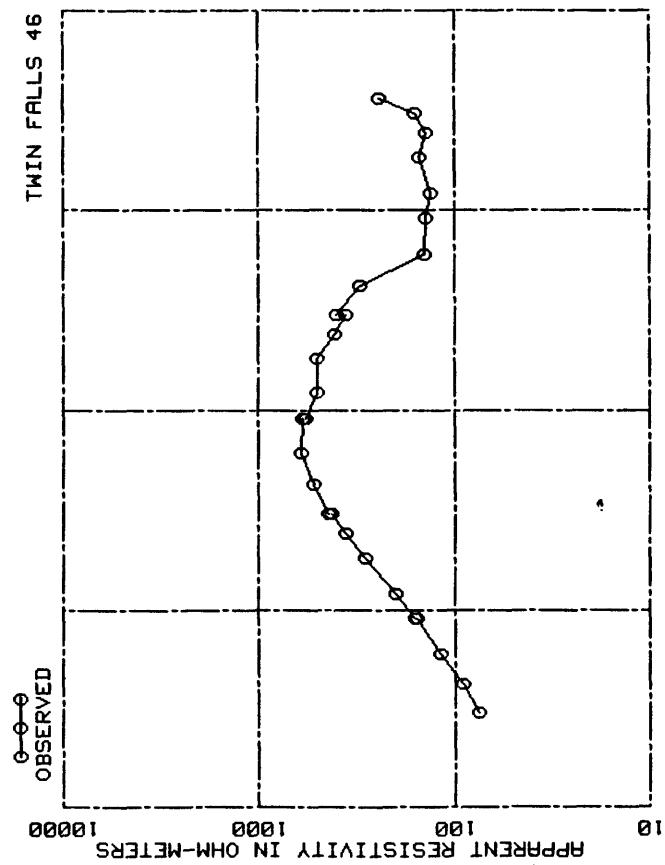




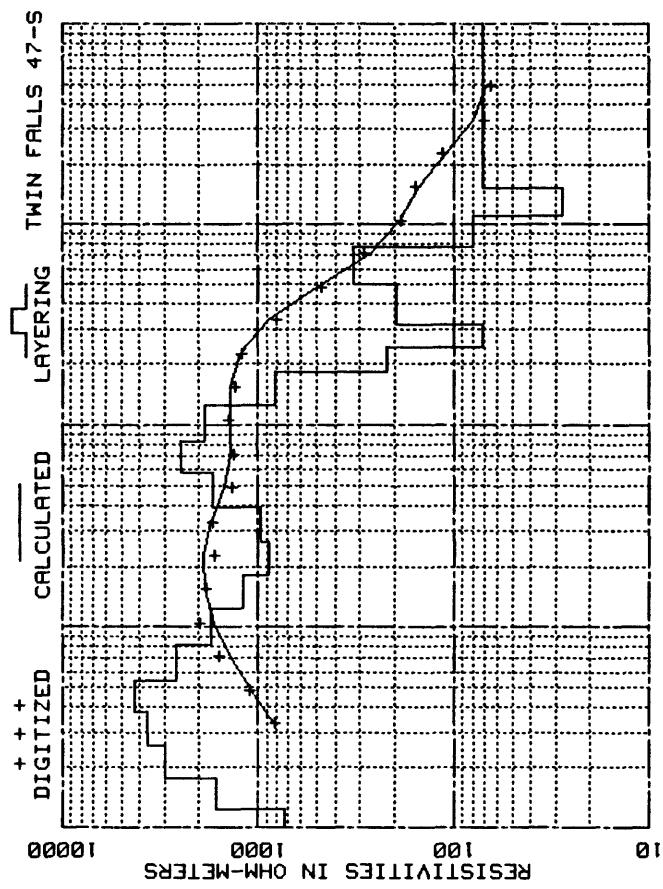


1 10 100 1000 10000 SCHLUMBERGER ELECTRODE SPACING (AB/2), OR DEPTH IN METERS

	AB/2 IN RESISTIVITY METERS IN OHM-METERS	OBSERVED AB/2 IN RESISTIVITY METERS IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED RESISTIVITY IN OHM-METERS
3.05	75.00	575.00	.21	63.11	11.25
4.27	90.00	121.92	.31	62.39	121.79
6.10	117.00	182.89	.45	63.89	90.46
9.14	156.00	243.84	.67	64.36	549.06
9.14	158.00	384.89	.98	59.52	529.16
12.19	208.00	384.89	1.44	59.86	638.62
18.29	285.00	422.72	2.88	89.89	429.92
24.38	360.00	609.69	2.81	180.37	268.80
30.48	425.00	914.40	3.73	292.85	371.83
30.48	440.00	1219.20	5.18	359.57	574.76
42.67	520.00	1828.89	7.15	528.35	237.92
60.96	600.00	2430.49	9.13	1144.87	121.48
91.44	590.00	3048.09			47.78
		3657.60			629.63

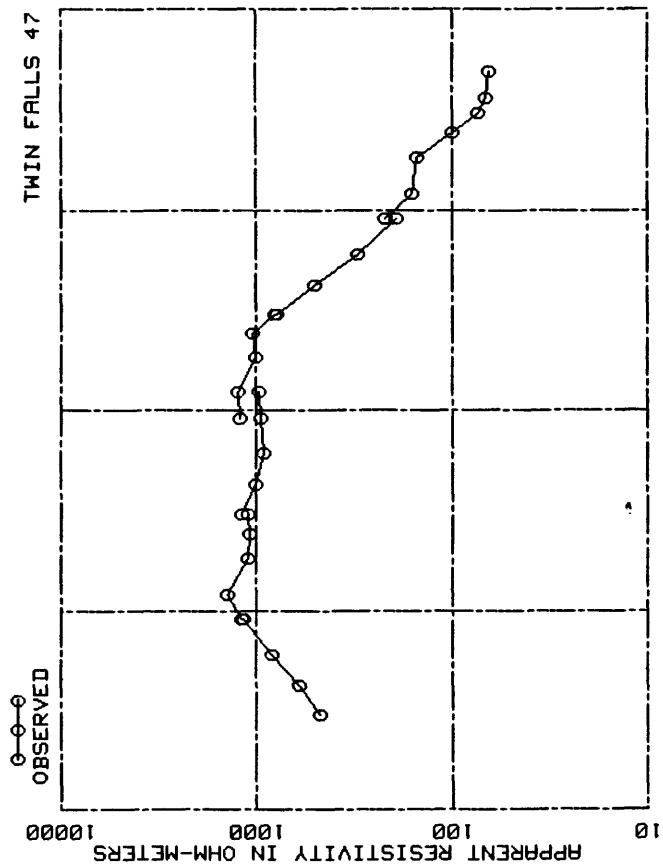


	AB/2 IN RESISTIVITY METERS IN OHM-METERS	OBSERVED AB/2 IN RESISTIVITY METERS IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED RESISTIVITY IN OHM-METERS
3.05	75.00	91.44	.21	63.11	11.25
4.27	90.00	121.92	.31	62.39	121.79
6.10	117.00	182.89	.45	63.89	90.46
9.14	156.00	243.84	.67	64.36	549.06
9.14	158.00	384.89	.98	59.52	529.16
12.19	208.00	384.89	1.44	59.86	638.62
18.29	285.00	422.72	2.88	89.89	429.92
24.38	360.00	609.69	2.81	180.37	268.80
30.48	425.00	914.40	3.73	292.85	371.83
30.48	440.00	1219.20	5.18	359.57	574.76
42.67	520.00	1828.89	7.15	528.35	237.92
60.96	600.00	2430.49	9.13	1144.87	121.48
91.44	590.00	3048.09			47.78



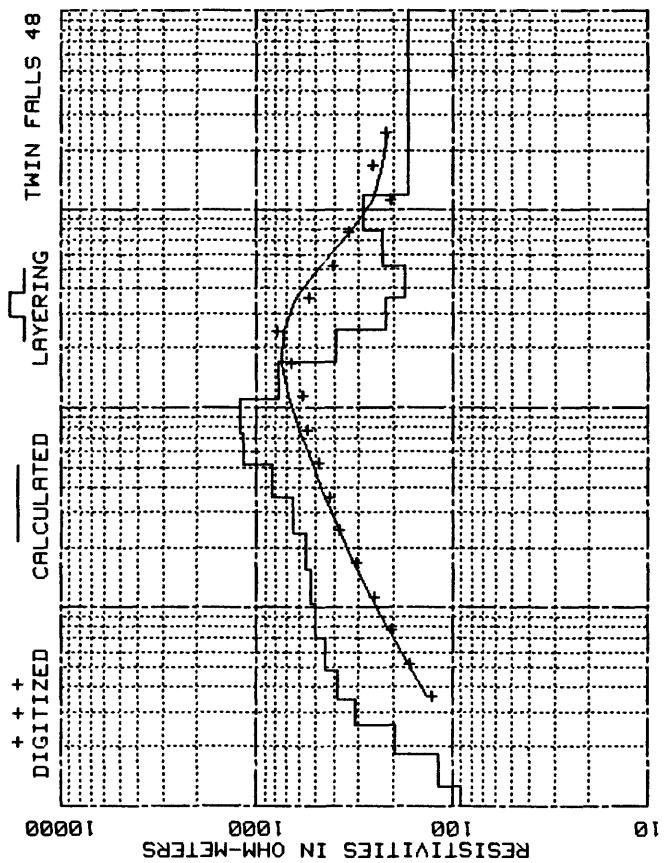
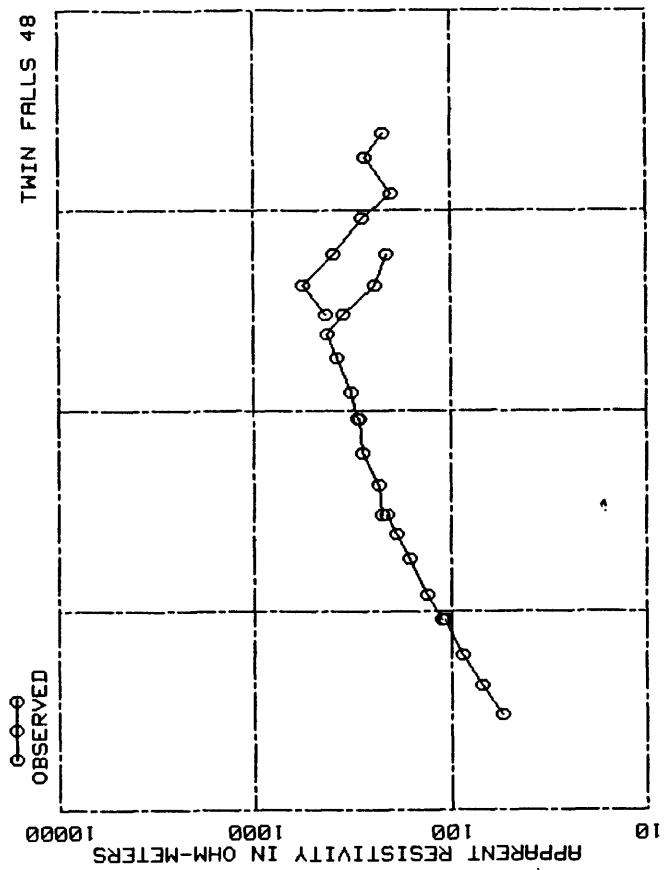
1 10 100 1000 SCHLUMBERGER ELECTRODE SPACING (AB/2), OR DEPTH IN METERS

	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
.19	388.58	26.49	888.76	888.76
.28	421.16	33.42	974.72	974.72
.41	418.54	58.11	1689.80	1689.80
.68	336.17	83.35	2455.68	2455.68
.89	308.14	124.67	1879.00	1879.00
1.24	725.42	181.39	809.99	809.99
1.76	1648.93	241.16	218.68	218.68
2.55	2991.50	312.28	71.47	71.47
3.81	3719.96	501.31	196.36	196.36
5.42	4310.59	716.81	328.02	328.02
8.26	2633.16	1117.36	78.79	78.79
12.33	1728.78	1515.76	27.62	27.62
16.16	1185.92	99999.99	76.54	76.54

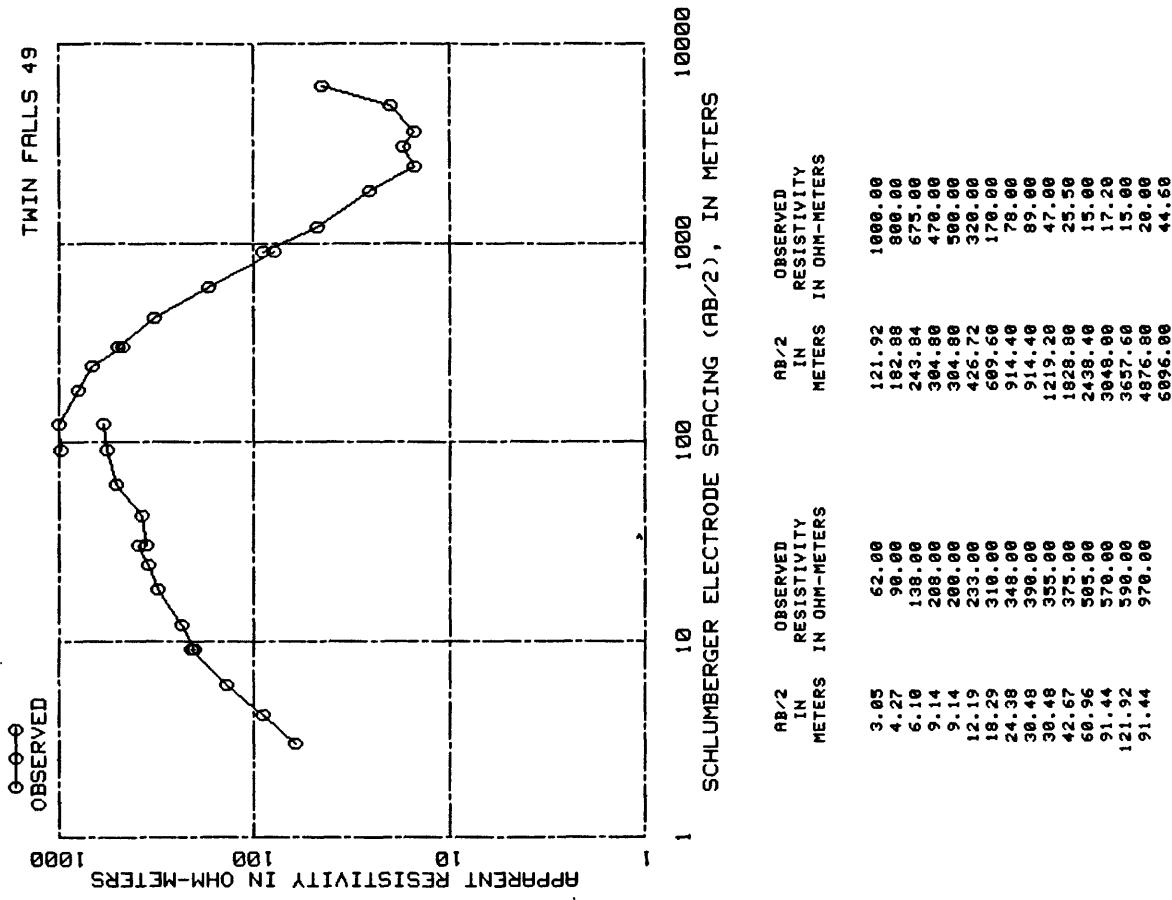
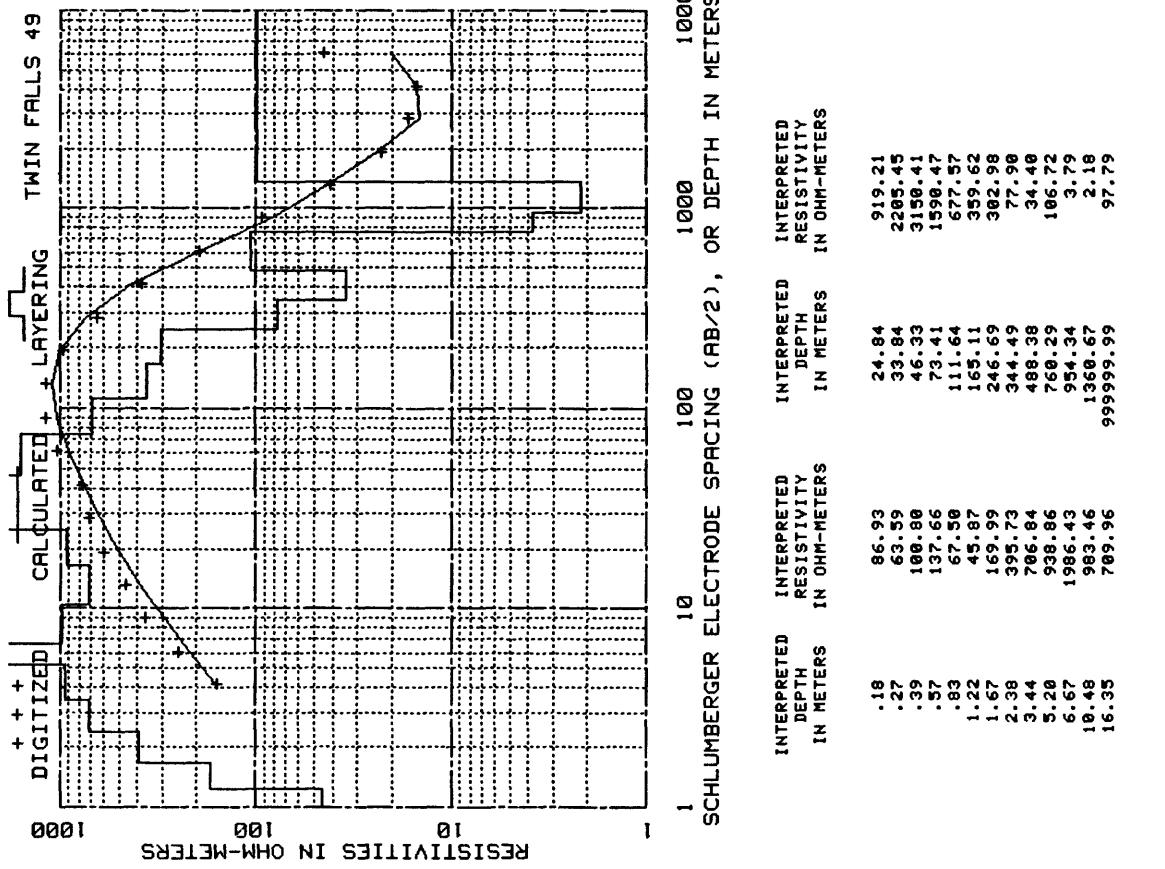


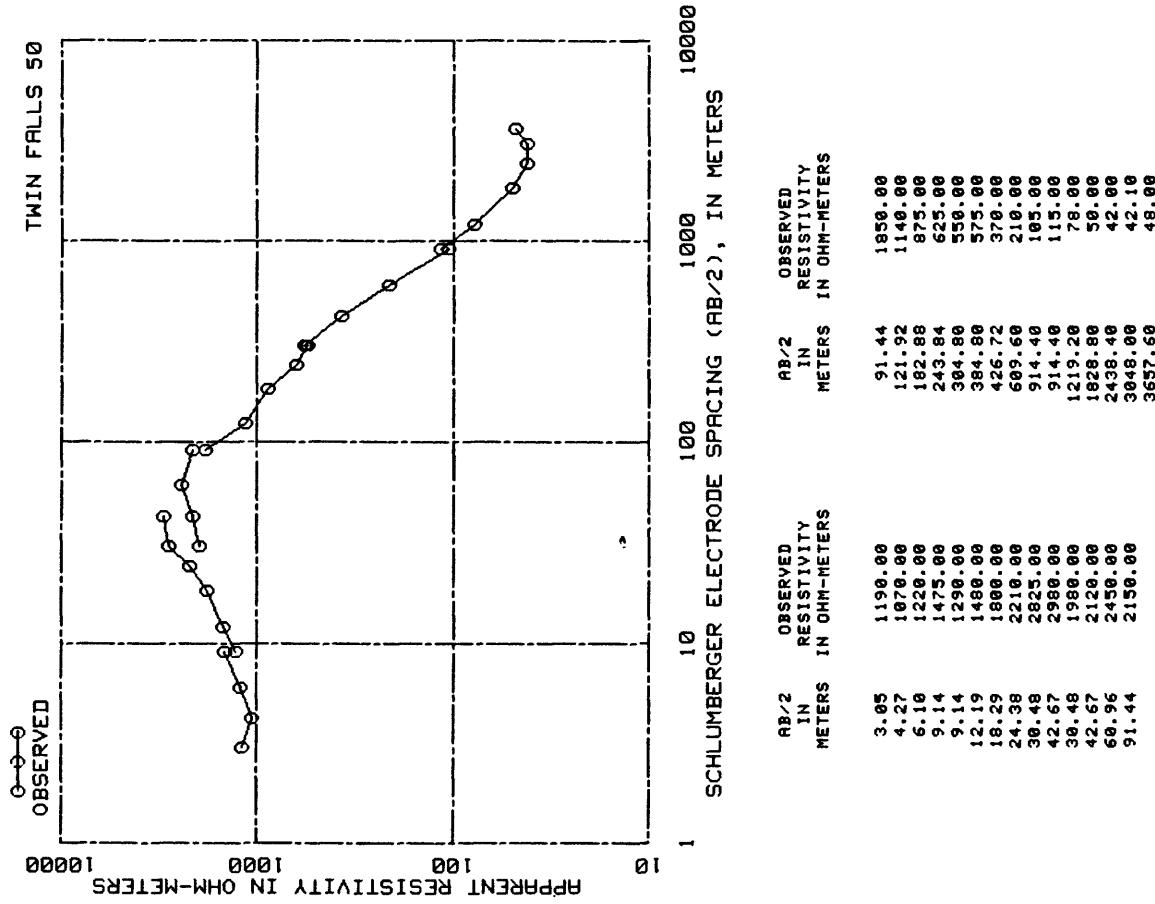
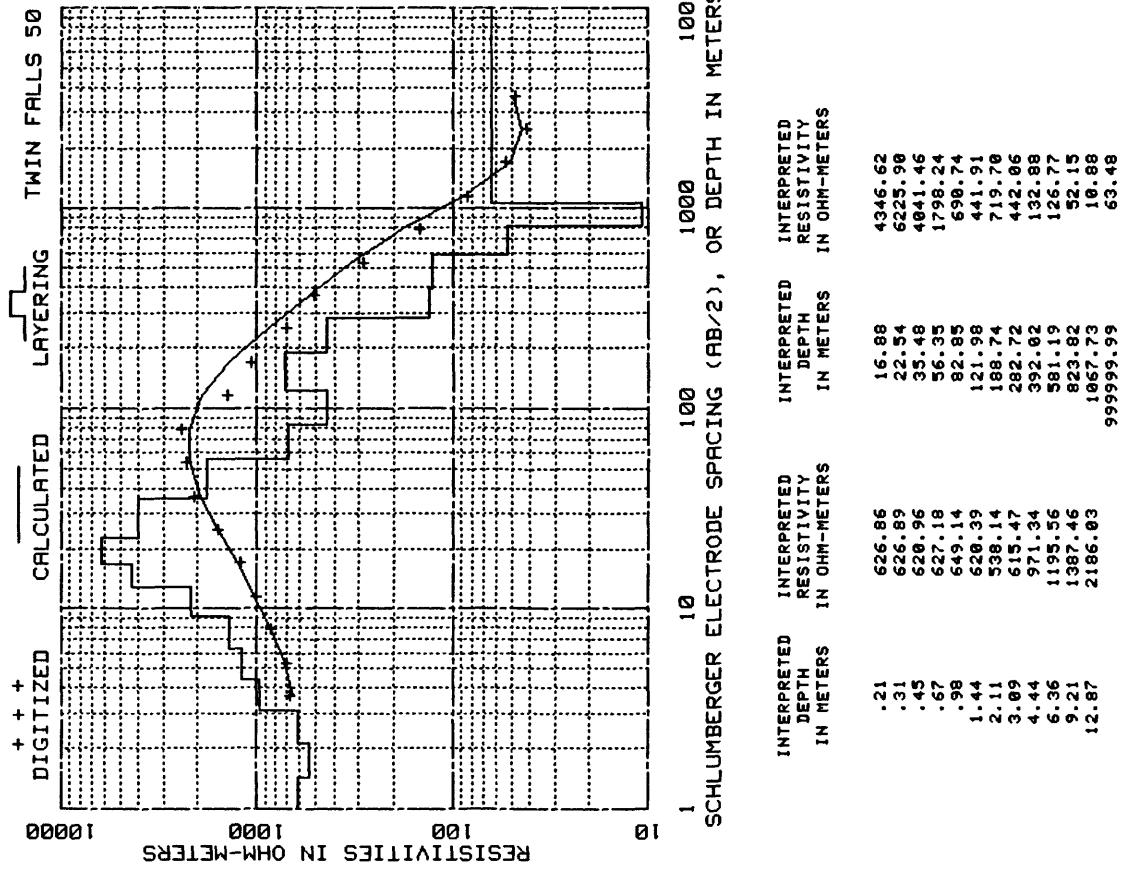
1 10 100 1000 SCHLUMBERGER ELECTRODE SPACING (AB/2), IN METERS

AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS	AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS
3.05	470.00	121.92	1240.00
4.27	600.00	182.88	1000.00
6.10	835.00	243.84	1040.00
9.14	1160.00	304.80	880.00
9.14	1200.00	308.80	790.00
12.19	1420.00	426.72	500.00
18.29	1095.00	689.68	300.00
24.38	1075.00	914.40	192.00
30.48	1100.00	914.40	220.00
36.48	1200.00	1219.20	160.00
42.67	1000.00	1828.80	150.00
68.96	910.00	2438.40	100.00
91.44	950.00	3048.00	74.00
121.92	970.00	3657.60	67.00
91.44	1220.00	4876.88	64.00

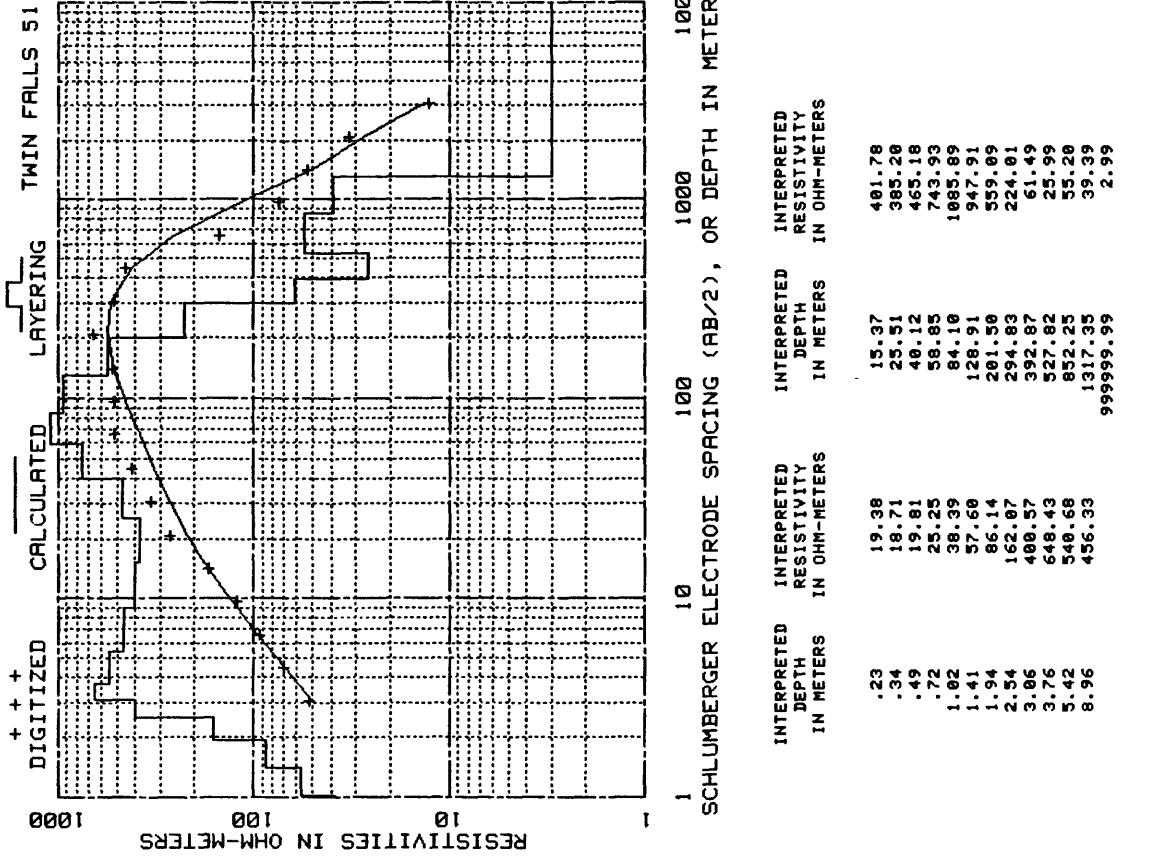
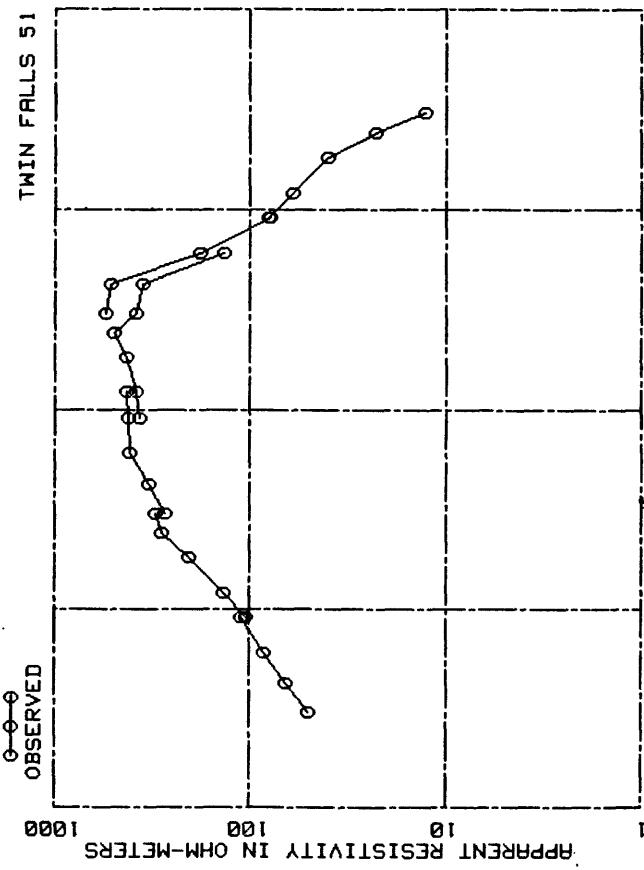


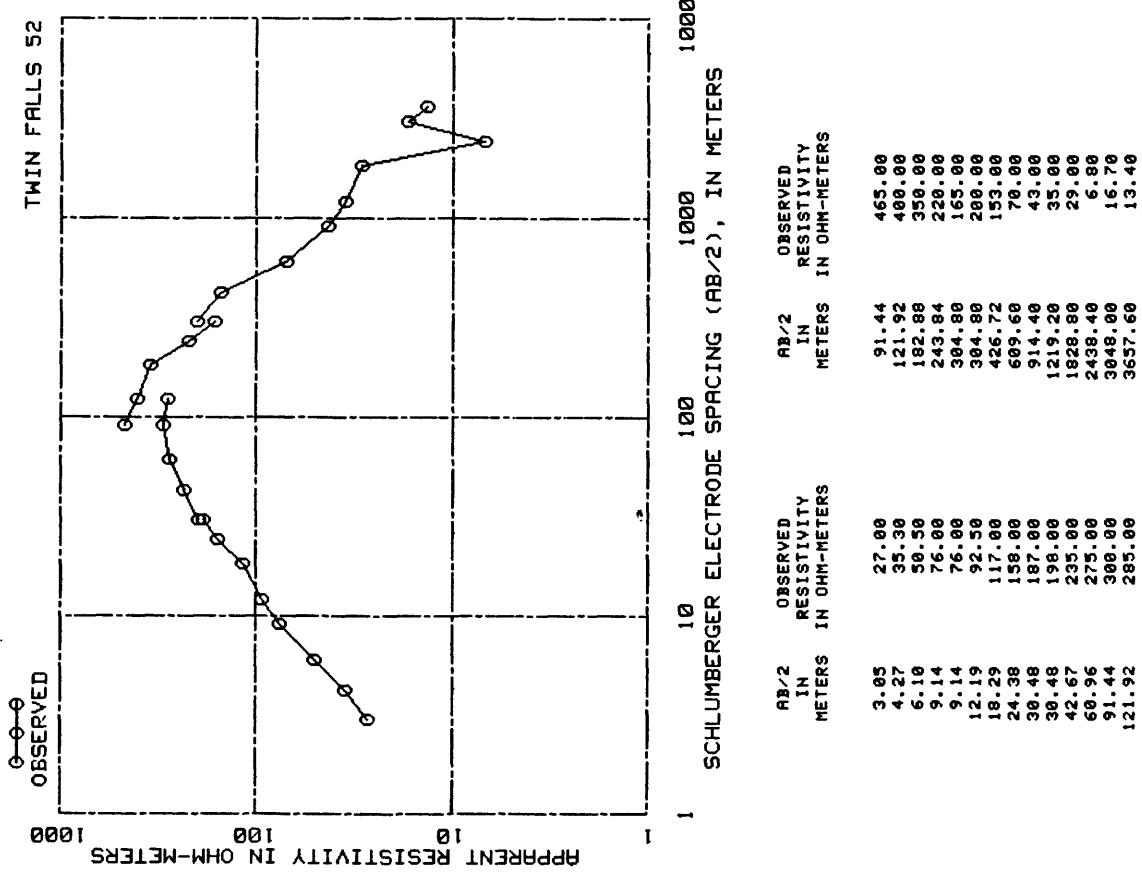
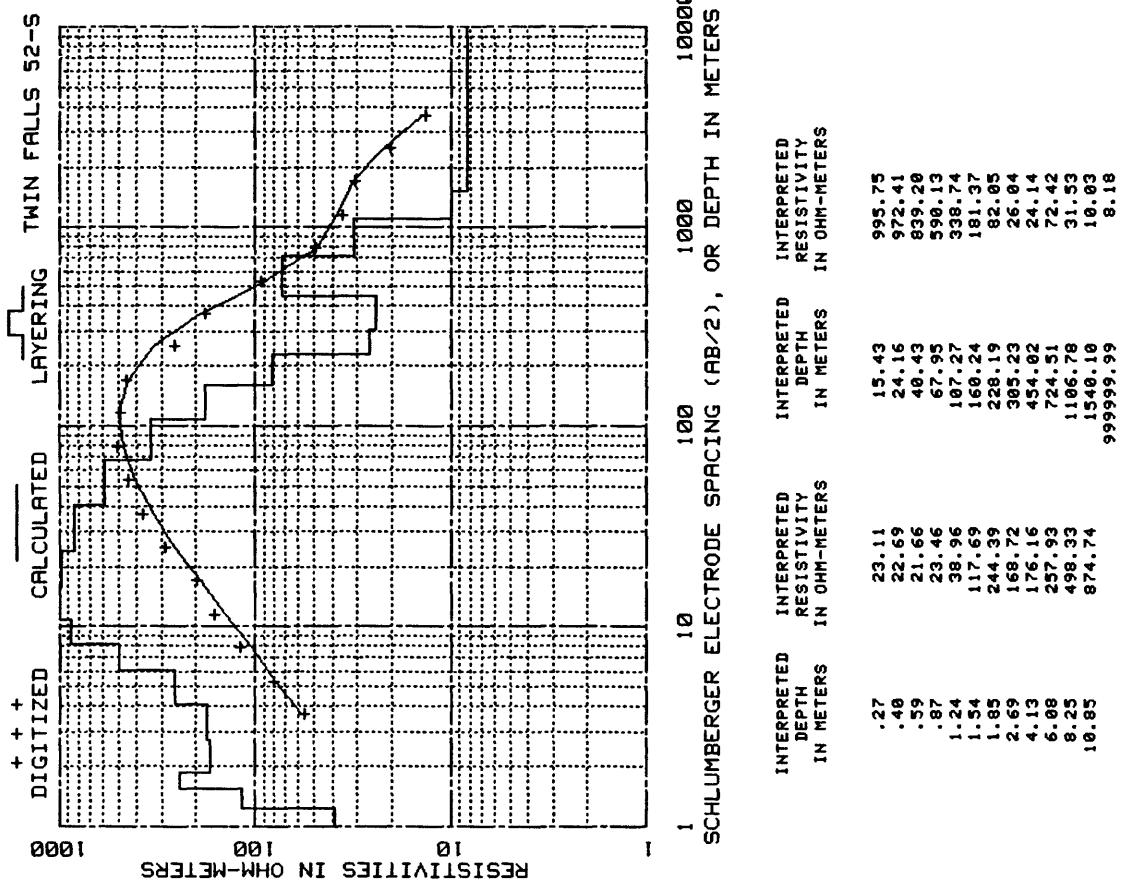
AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS	AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
3.05	55.00	91.44	295.00	.27	91.24	23.71	563.92
4.27	79.00	121.92	320.00	.39	91.55	35.46	646.74
6.10	87.00	182.88	375.00	.58	90.38	51.99	839.54
9.14	108.00	243.84	420.00	.85	87.95	74.59	1174.88
9.14	112.00	304.88	355.00	1.25	90.76	118.58	1283.42
12.19	131.00	426.72	240.00	1.82	117.38	165.74	767.32
18.29	162.00	609.60	210.00	2.54	196.94	248.62	393.91
24.38	196.00	435.00	435.00	3.47	312.04	357.24	219.49
30.48	211.00	426.72	560.00	4.88	383.04	523.17	175.64
30.48	222.00	609.60	392.00	7.95	449.61	790.14	226.93
42.67	230.00	914.40	280.00	10.43	580.22	1187.11	287.32
60.96	280.00	1219.20	200.00	15.78	530.39	99999.99	169.89
91.44	292.00	1828.88	270.00				
		2438.40	220.00				

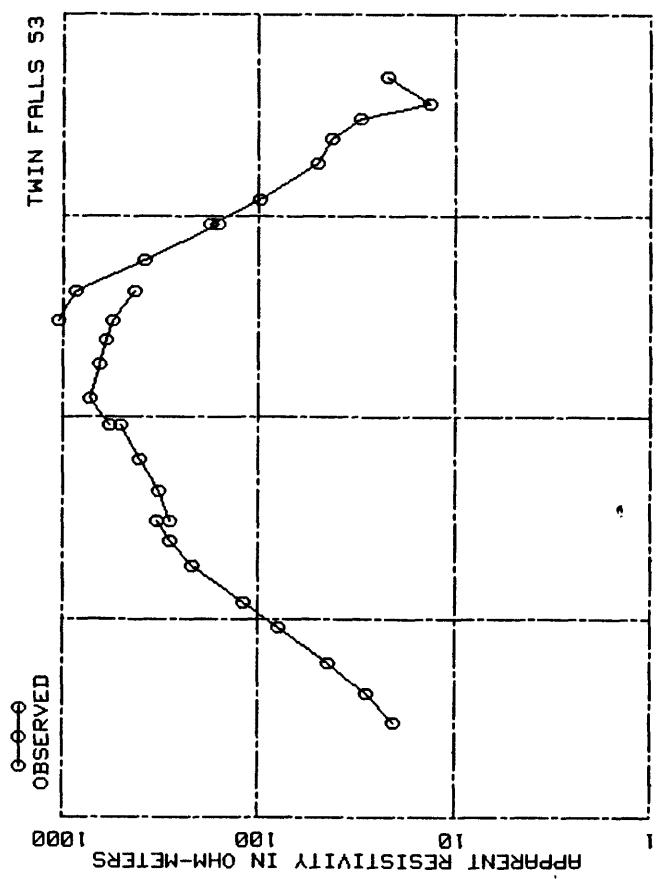
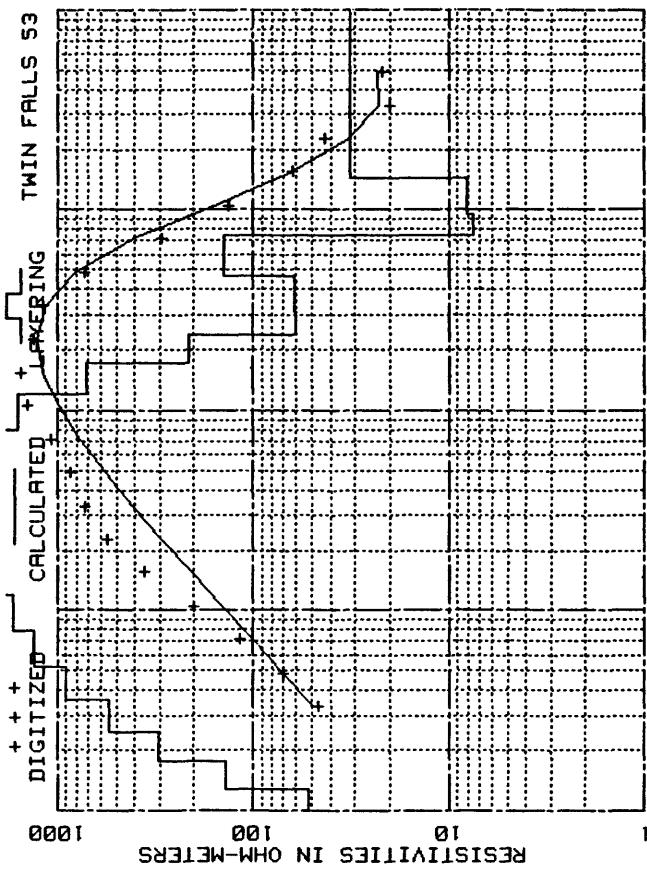




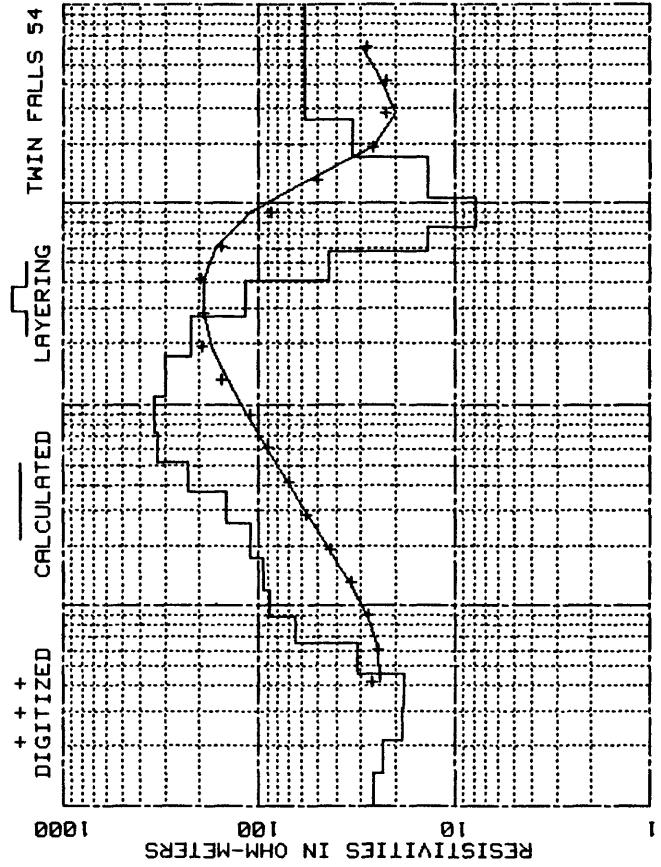
	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED DEPTH IN METERS
	4346.62	16.88	
	6225.98	22.54	
	35.48	.31	
	4041.46	626.89	
	1798.24	.45	
	56.35	.67	
	690.74	628.96	
	82.85	.98	
	441.91	627.18	
	121.98	619.14	
	188.74	628.39	
	719.78	538.14	
	212.72	538.14	
	442.06	615.47	
	322.88	.21	
	302.02	626.86	
	122.77	.31	
	58.19	626.89	
	12.77	.45	
	823.82	.67	
	52.15	627.18	
	1387.46	.98	
	18.88	619.14	
	1065.73	628.39	
	18.88	538.14	
	63.48	615.47	
	999999.99	212.72	
		442.06	
		322.88	
		302.02	
		122.77	
		58.19	
		12.77	
		823.82	
		52.15	
		1387.46	
		18.88	
		1065.73	
		63.48	
		999999.99	



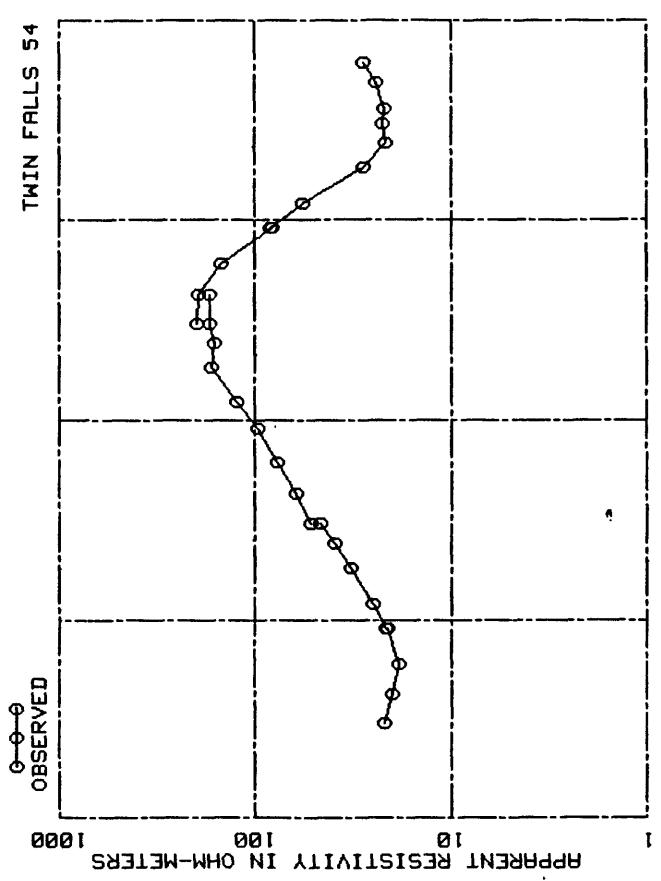




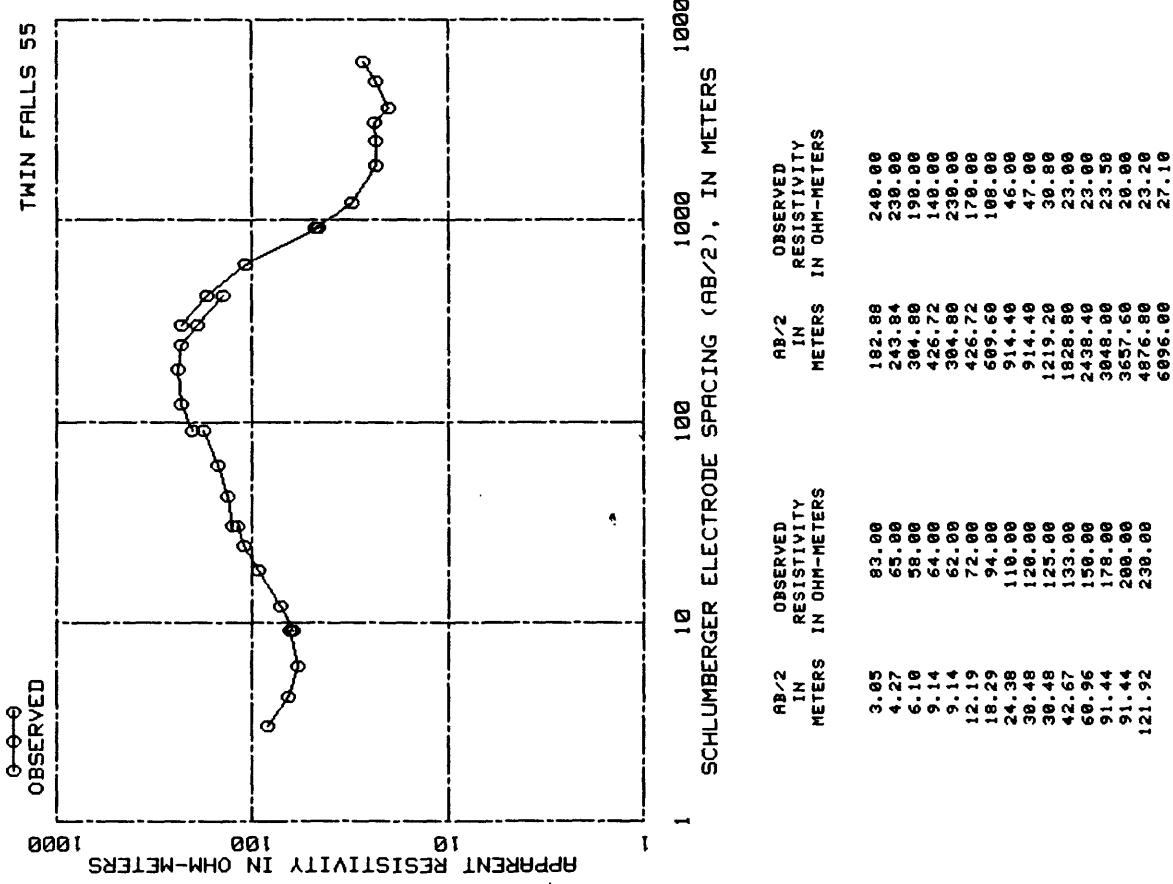
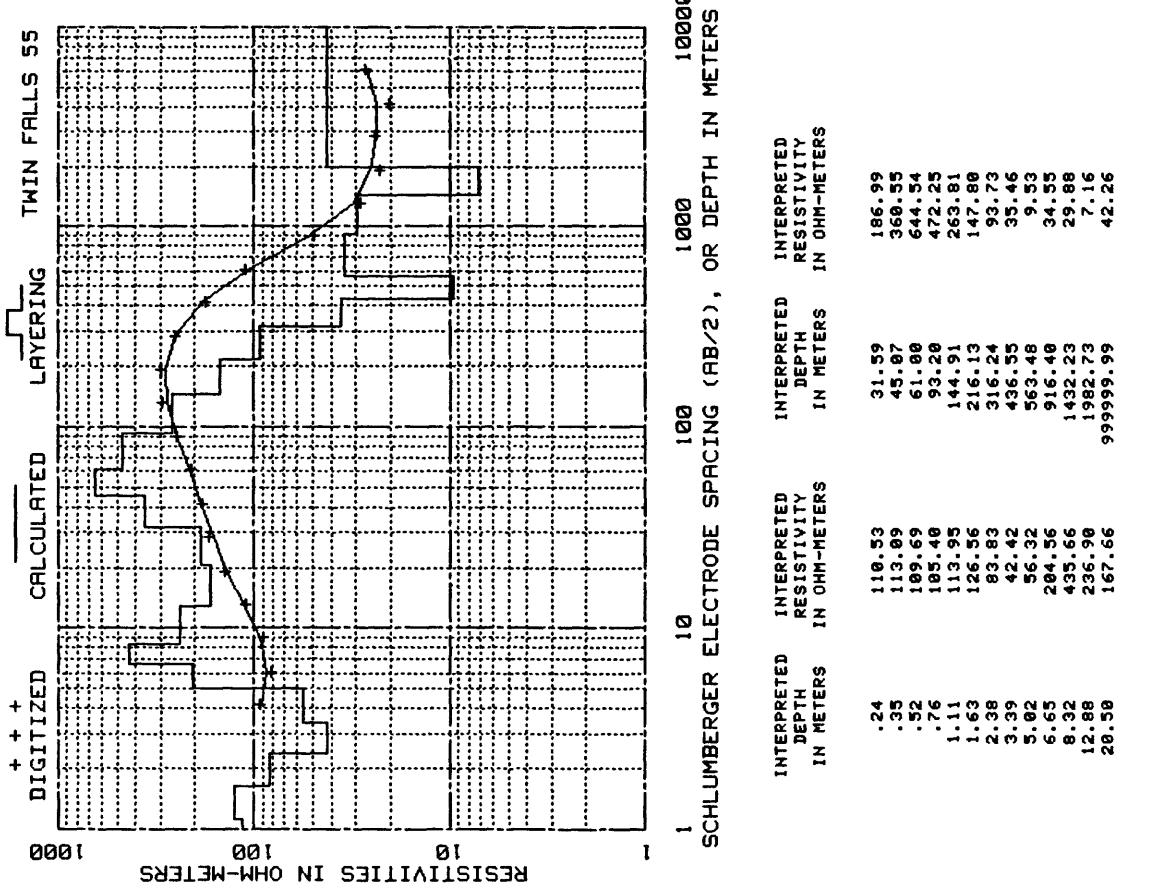
SCHLUMBERGER ELECTRODE SPACING (AB/2), IN METERS					
AB/2	OBSERVED IN RESISTIVITY METERS	AB/2 IN METERS	OBSERVED IN RESISTIVITY METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
3.05	20.20	182.98	650.00	.19	17.28
4.27	28.00	243.84	600.00	.28	19.38
6.10	44.20	304.80	550.00	.41	17.29
9.14	78.00	426.72	450.00	.68	13.69
9.14	79.00	304.80	1050.00	.88	19.76
12.19	120.00	426.72	810.00	1.27	51.73
18.29	217.00	609.60	380.00	1.77	137.51
24.38	280.00	914.40	162.00	2.46	305.20
36.48	328.00	914.40	178.00	3.56	543.22
42.67	282.00	1219.20	99.00	5.22	912.93
68.96	402.00	2438.40	50.00	7.84	1314.05
91.44	510.00	3048.90	42.00	12.02	1682.59
			38.00		12.02
			36.00		15.19
			34.00		4213.02
			32.00		
			30.00		
			28.00		
			26.00		
			24.00		
			22.00		
			20.00		
			18.00		
			16.00		
			14.00		
			12.00		
			10.00		
			8.00		
			6.00		
			4.00		
			2.00		
			0.00		



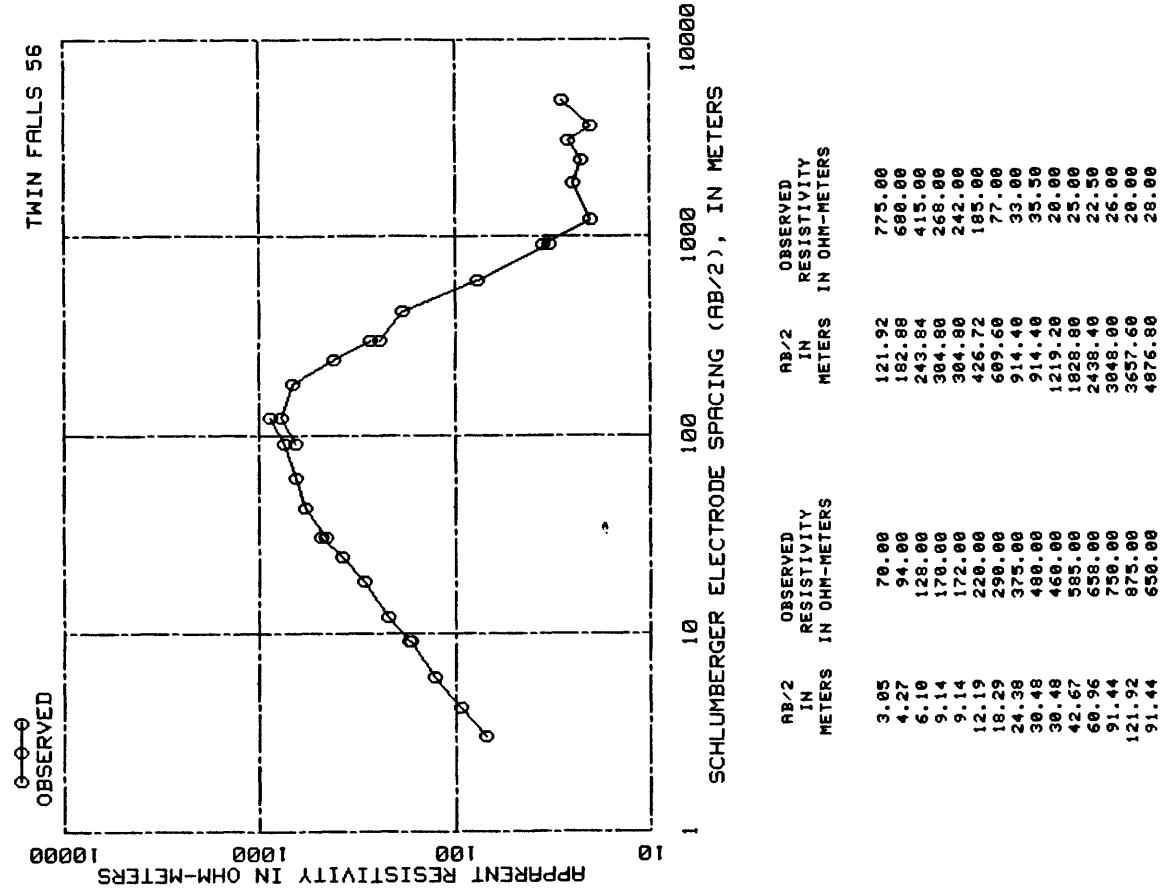
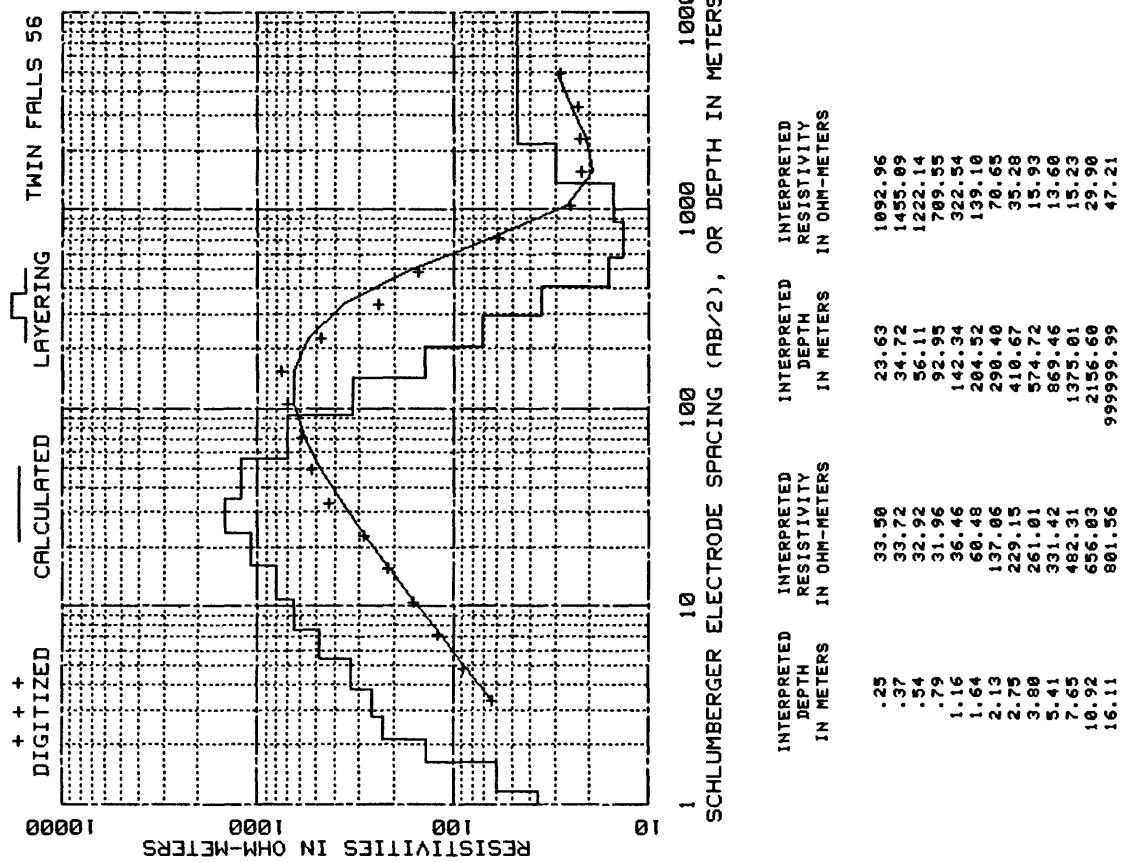
SCHLUMBERGER ELECTRODE SPACING (AB/2), OR DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
1	10000	10000	10000
10	1000	1000	1000
20	100	100	100
40	10	10	10
80	1	1	1

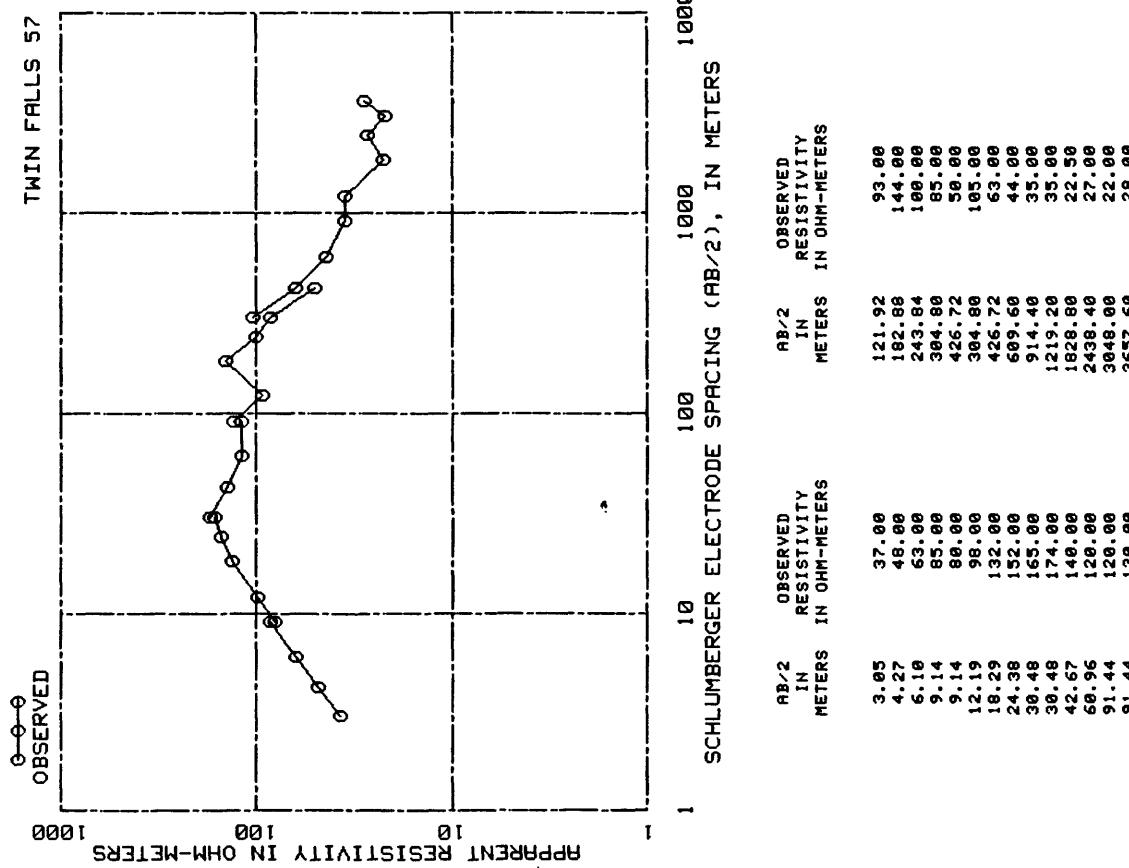
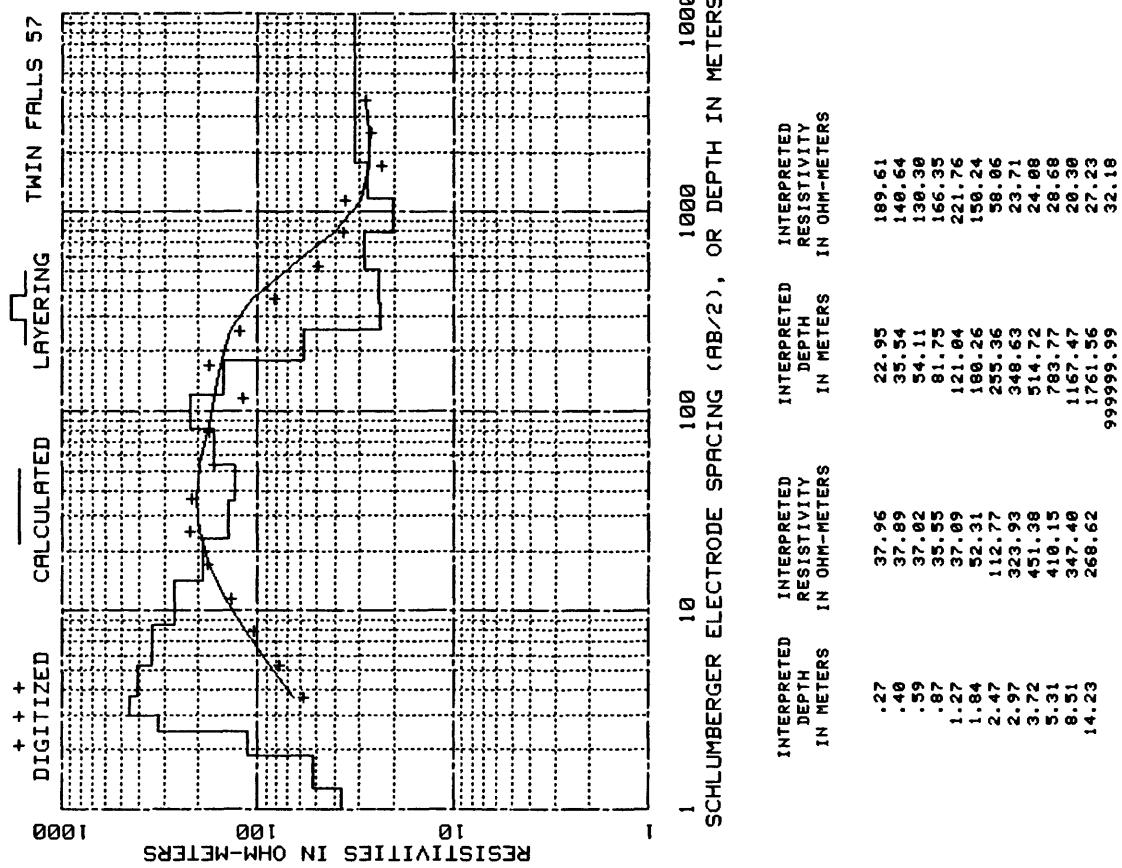


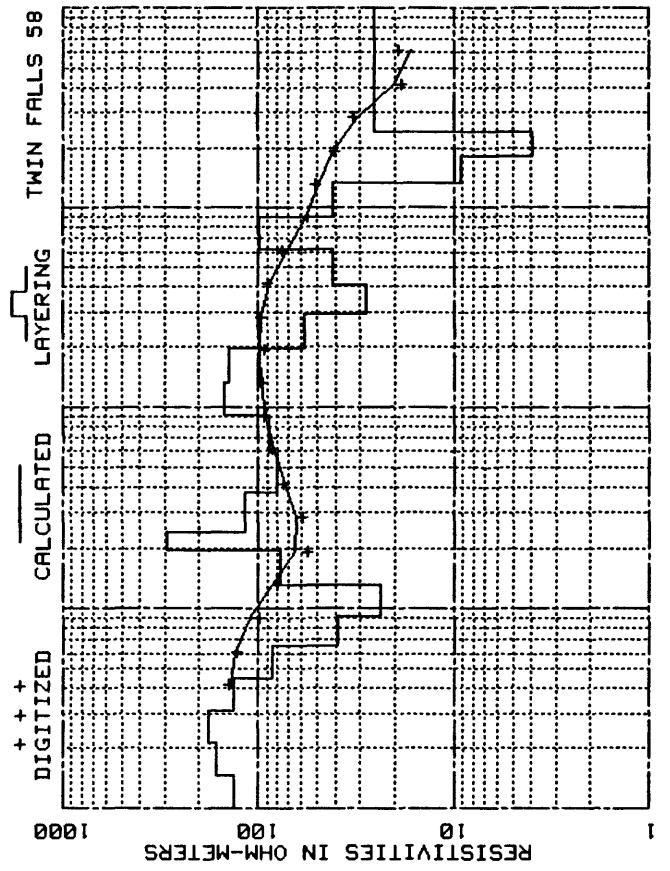
AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS	AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS
3.85	182.88	167.00	182.88
4.27	243.84	168.00	243.84
6.16	304.80	170.00	304.80
9.14	426.72	171.00	426.72
9.14	304.80	198.00	304.80
12.19	426.72	193.00	426.72
18.29	609.68	158.00	609.68
24.38	914.48	82.00	914.48
30.48	914.48	84.00	914.48
30.48	1219.38	57.00	1219.38
42.67	1828.88	28.00	1828.88
68.96	2438.48	21.50	2438.48
91.44	3048.08	22.50	3048.08
91.44	3657.68	22.00	3657.68
121.92	4876.08	24.00	4876.08
	6896.08	28.20	6896.08



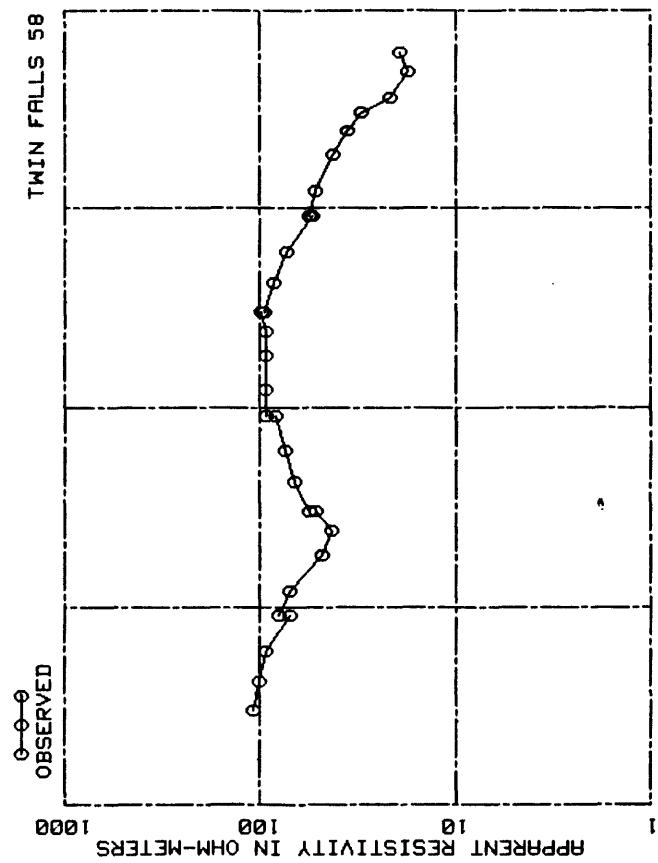
	AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS	AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
	3.05	83.00		182.00	.24	110.53	31.59	185.99
	4.27	65.00		243.84	.35	113.09	45.07	360.55
	6.18	58.00		384.88	.52	109.69	61.00	644.54
	9.14	64.00		422.72	.76	105.40	93.20	472.25
	9.14	62.00		384.88	1.11	113.95	144.91	263.81
	12.19	72.00		426.72	1.63	126.56	216.13	147.80
	18.29	94.00		689.60	2.38	83.83	316.24	93.73
	24.38	118.00		914.40	3.39	42.42	436.55	35.46
	38.48	120.00		914.40	5.02	56.32	563.48	9.53
	38.48	125.00		1219.20	6.65	284.56	916.40	34.55
	42.67	133.00		39.88	8.32	435.66	1432.23	29.88
	68.96	150.00		2438.40	12.88	236.90	1932.73	7.16
	91.44	178.00		3948.00	20.58	167.66	99999.99	42.26
	91.44	200.00		3657.60				
	121.92	230.00		4876.80				
				6096.00				
				27.16				

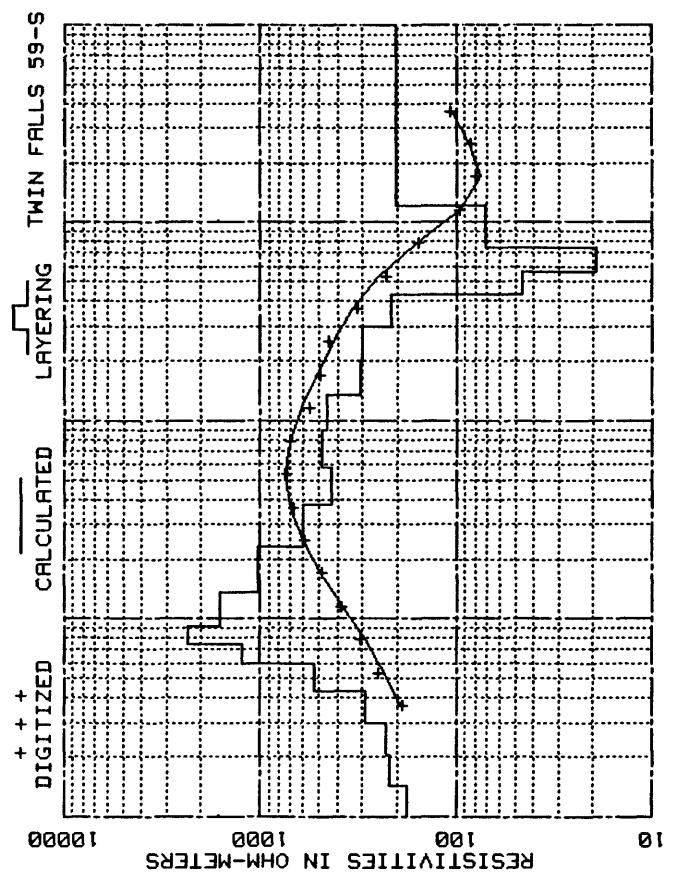






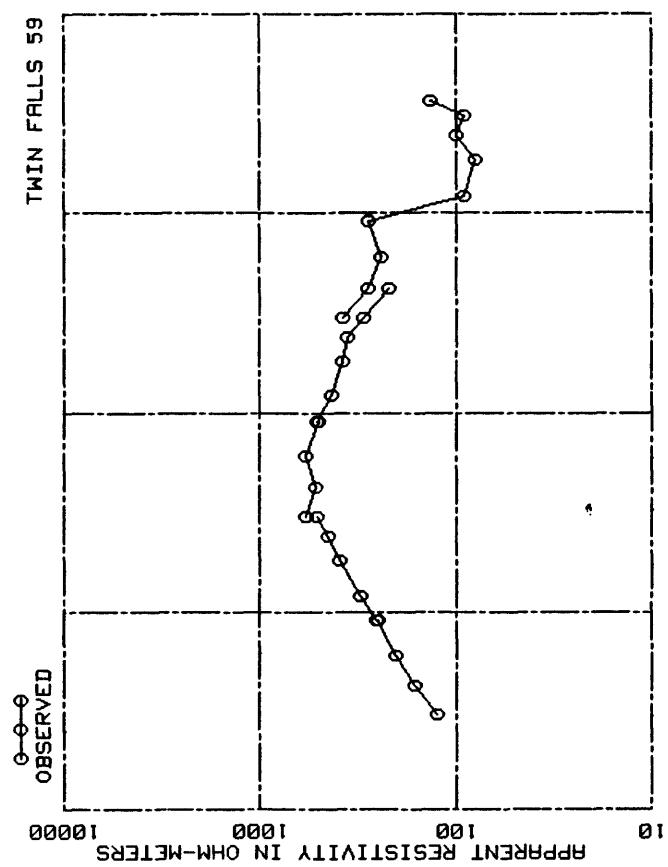
SCHLUMBERGER ELECTRODE SPACING (AB/2), OR DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS
.31	127.38	37.84	117.08	
.46	127.99	55.17	88.17	
.67	126.75	98.56	87.68	
.98	124.57	132.48	149.38	
1.45	131.98	197.78	141.68	
2.11	164.11	291.11	58.17	
3.08	181.47	412.97	28.02	
4.53	134.09	623.57	41.84	
6.58	84.41	897.03	99.11	
9.25	39.48	1344.95	41.65	
13.04	23.61	1800.91	9.31	
19.42	76.79	2412.58	3.95	
23.91	232.26	99999.99	25.48	
3657.69	21.79			
4876.88	17.46			
6096.00	19.16			





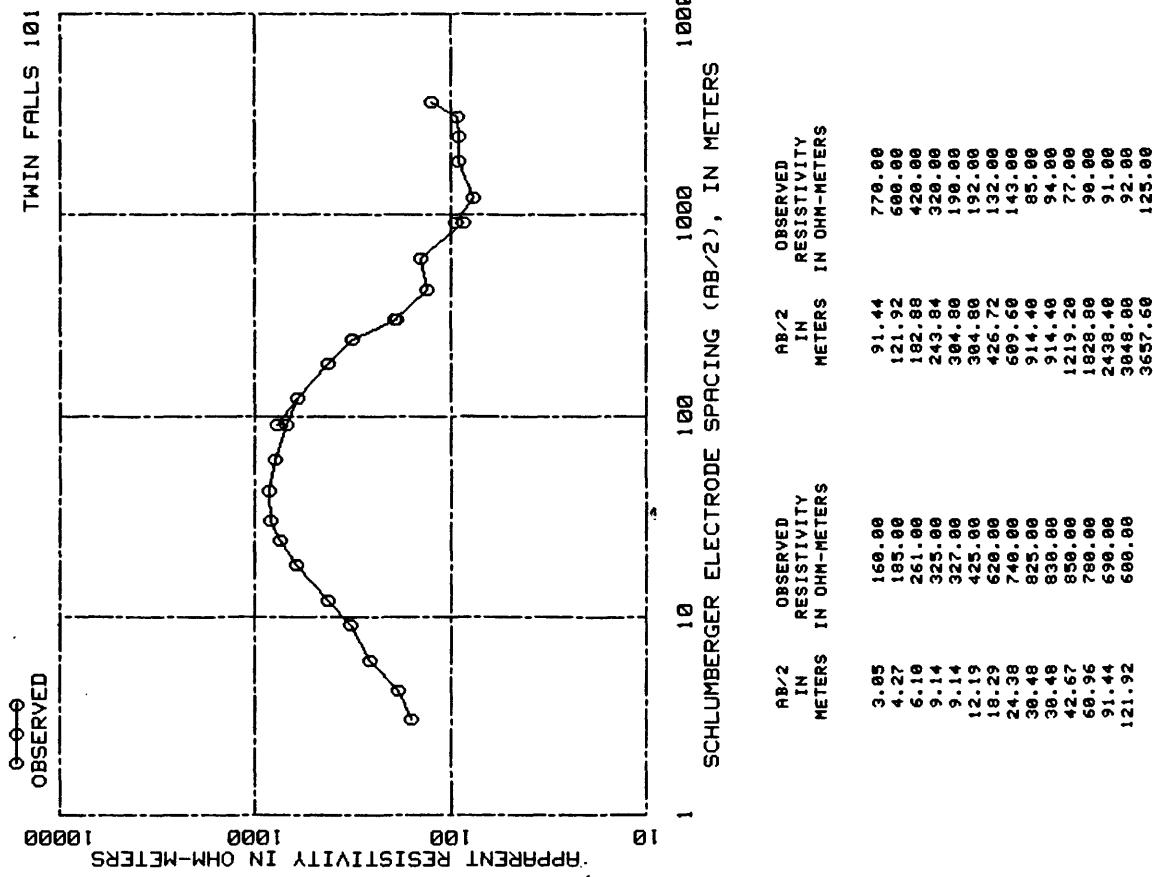
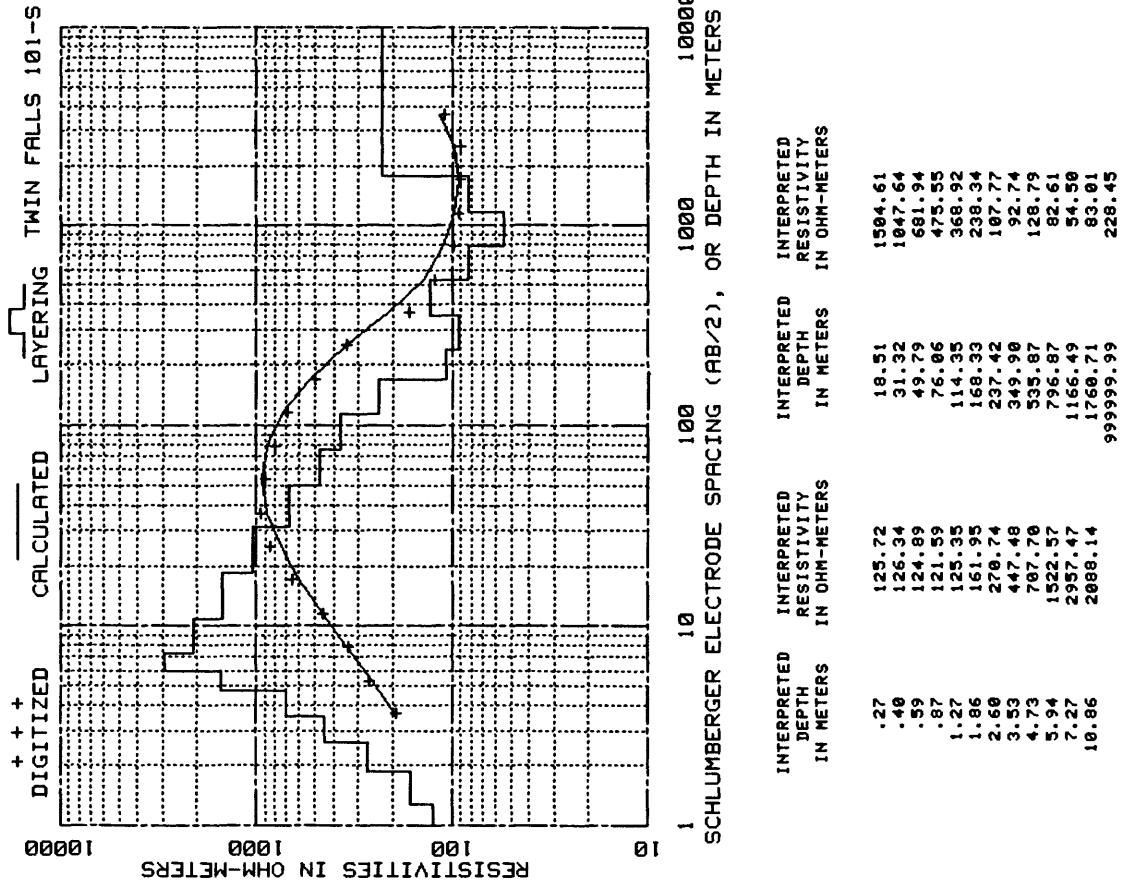
1 SCHLUMBERGER ELECTRODE SPACING (AB/2), OR DEPTH IN METERS

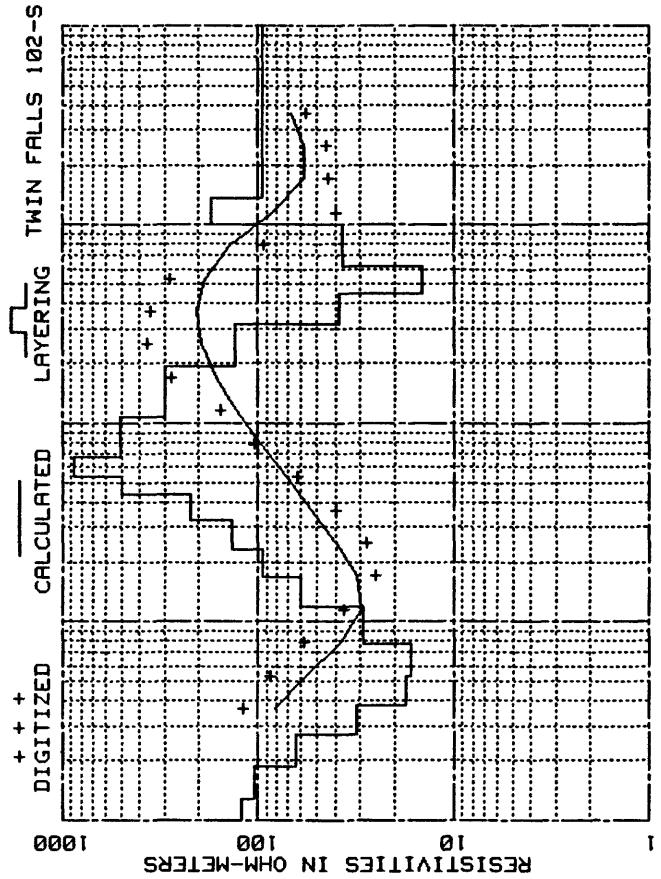
	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED RESISTIVITY IN OHM-METERS
			1620.35
		.21	13.71
		.31	23.13
		.45	37.47
		.67	694.89
		.98	57.95
		1.42	432.13
		1.42	488.83
		1.42	456.44
		2.05	396.18
		3.00	300.94
		4.34	226.74
		5.94	292.15
		7.46	434.19
		9.19	567.74
		9.19	45.72
		9.19	751.56
		9.19	19.31
		9.19	70.85
		2327.75	1289.33
			999999.99
			201.45



1 APPARENT RESISTIVITY IN OHM-METERS

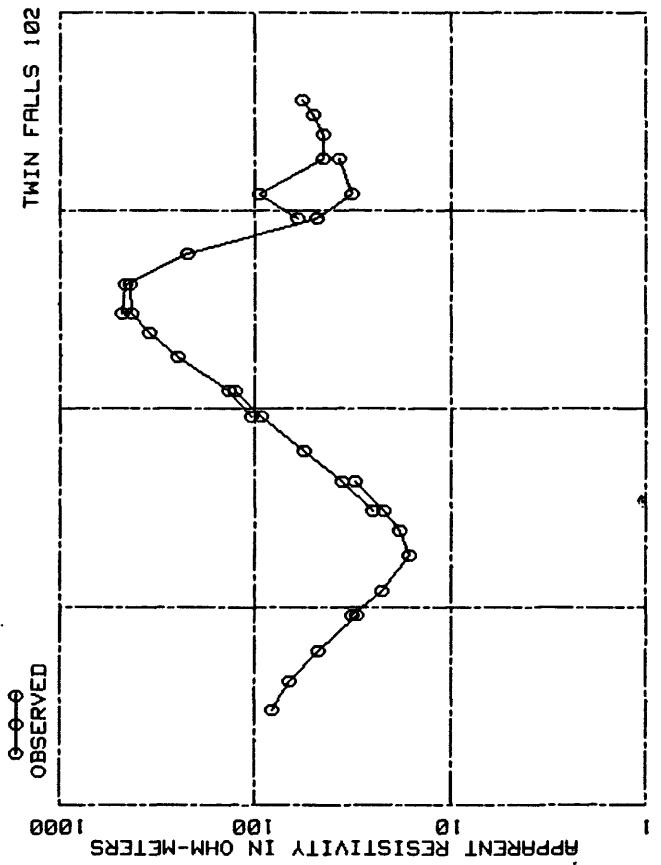
AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS	AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS
3.05	125.00	121.92	430.00
4.27	162.00	182.88	380.00
6.19	204.00	243.84	360.00
9.14	256.00	308.88	295.00
9.14	255.00	426.72	220.00
12.19	310.00	384.98	390.00
18.29	390.00	426.72	280.00
24.38	450.00	609.60	240.00
30.48	512.00	914.40	280.00
30.48	580.00	1219.20	90.00
42.67	522.00	1828.80	80.00
60.96	582.00	2438.40	100.00
91.44	500.00	3068.00	90.00
91.44	510.00	3657.60	134.60





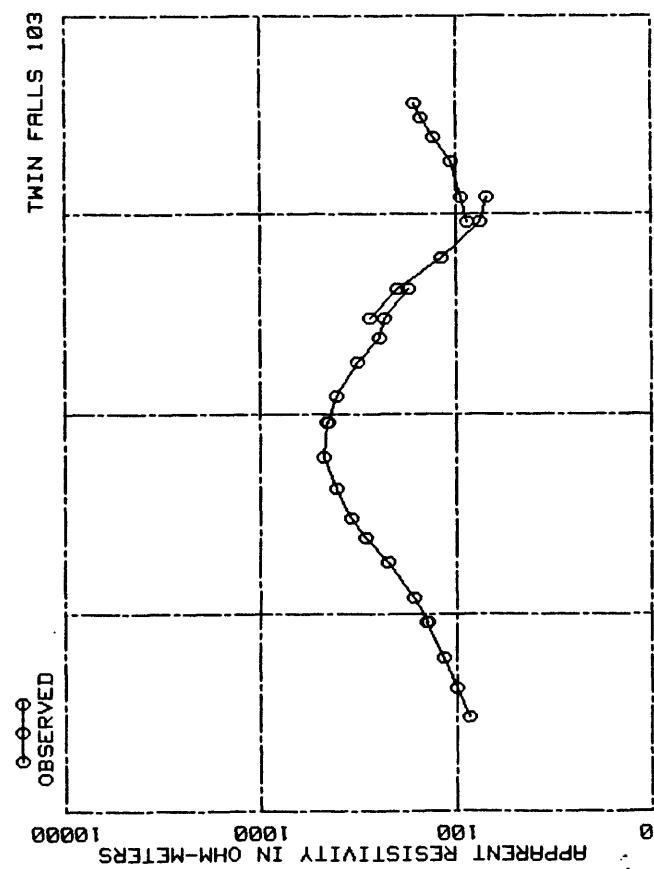
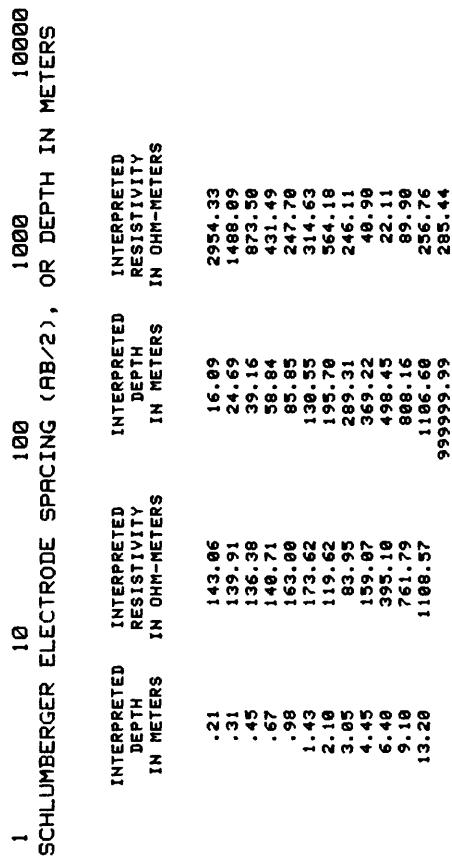
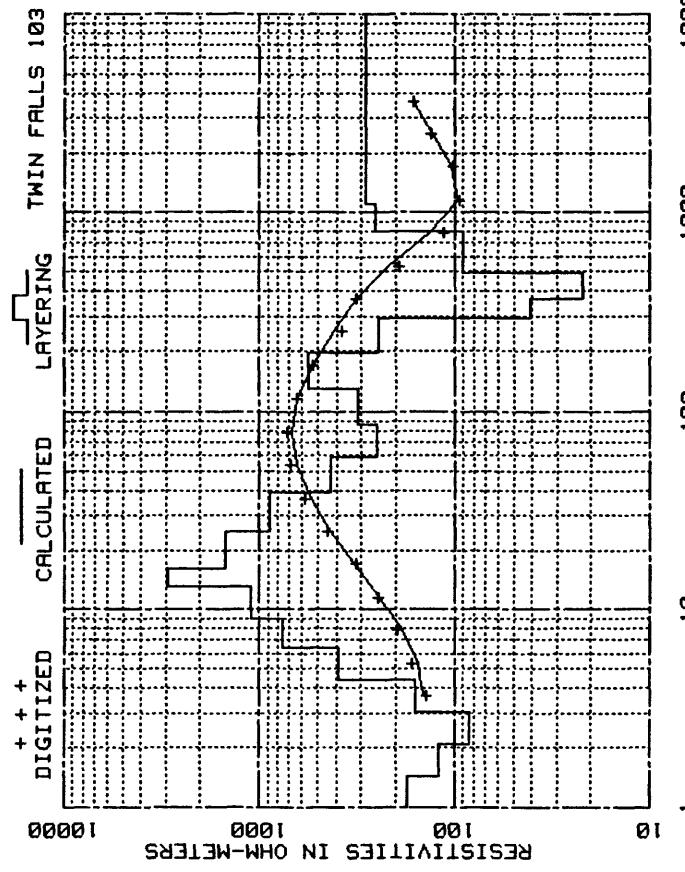
1 10 100 1000 10000
SCHLUMBERGER ELECTRODE SPACING ($AB/2$), OR DEPTH IN METERS

INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED RESISTIVITY IN OHM-METERS	
		INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
.27	119.26	23.26	94.47
.48	118.71	32.11	135.4
.59	118.95	43.37	219.23
.67	126.98	54.22	496.45
1.27	121.77	67.38	877.19
1.87	104.98	107.77	510.89
2.78	63.76	192.92	300.19
3.79	31.04	314.06	129.59
5.32	17.59	447.58	38.39
7.13	16.66	615.87	14.61
11.88	29.27	1016.16	37.11
16.84	60.78	1354.64	174.53
		999999.99	99.01

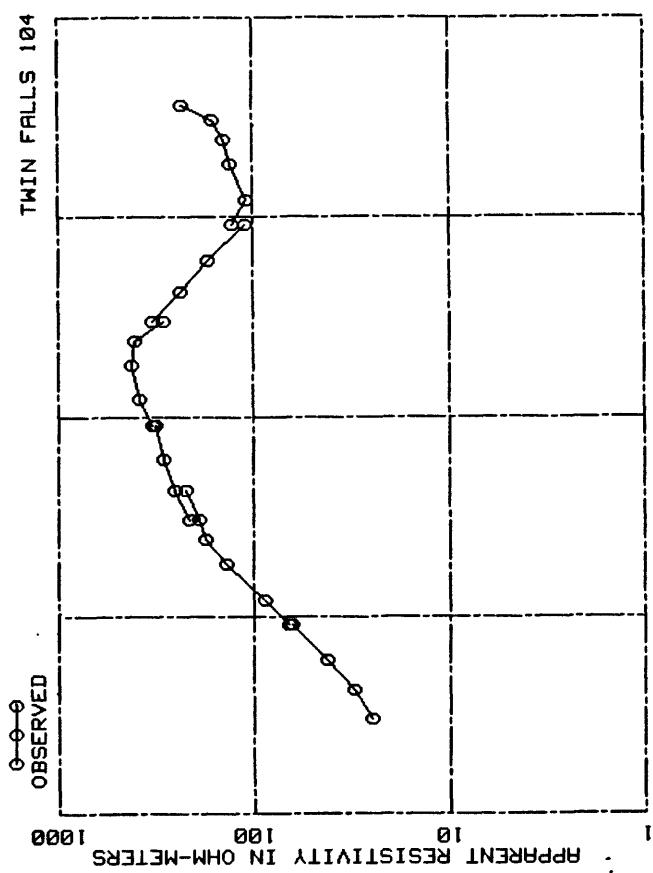
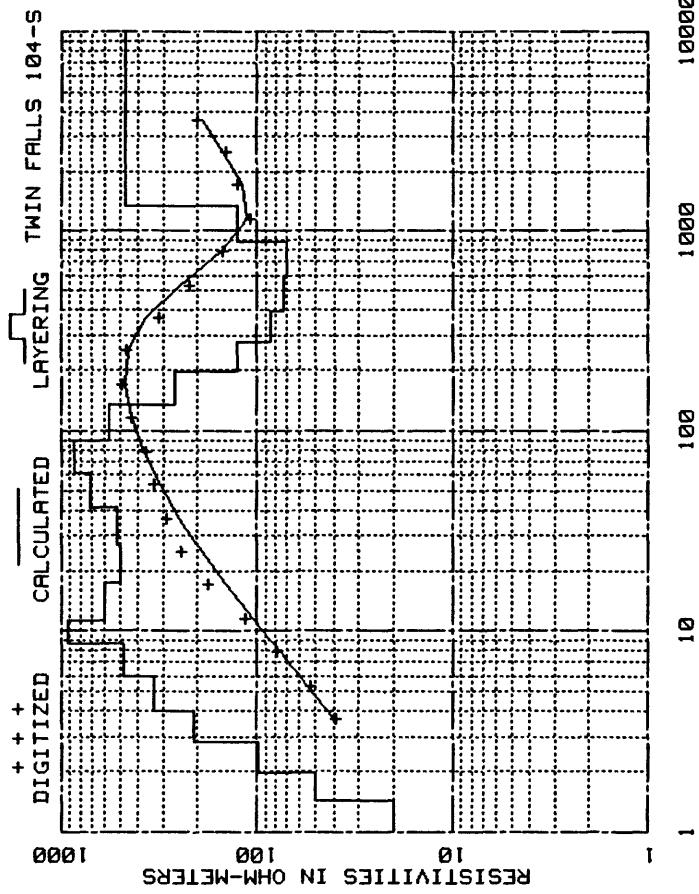


1 10 100 1000 10000
SCHLUMBERGER ELECTRODE SPACING ($AB/2$), IN METERS

AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS	AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS
3.05	81.00	121.92	135.00
4.27	66.00	182.88	256.00
6.18	47.00	243.84	346.00
9.14	30.00	304.80	439.00
9.14	32.00	422.72	435.00
12.19	22.20	384.80	480.00
18.29	16.18	426.72	469.00
24.38	18.00	681.60	220.00
30.48	22.00	914.40	48.00
42.67	31.00	1219.20	32.00
30.48	25.20	1828.80	37.00
42.67	36.00	914.40	60.00
60.96	56.00	1219.20	95.00
91.44	94.00	1828.80	45.00
121.92	125.00	2438.40	45.00
91.44	105.00	3044.00	50.00
		3657.60	57.00

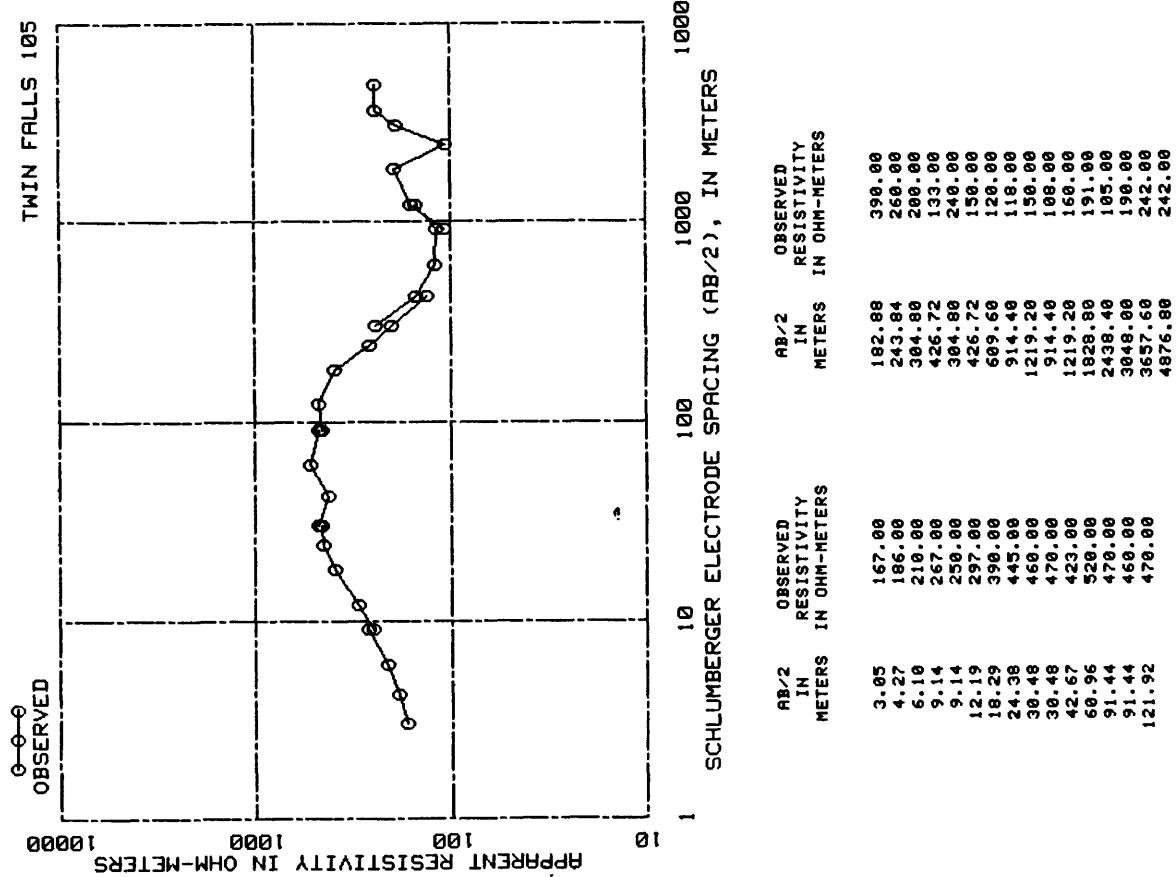
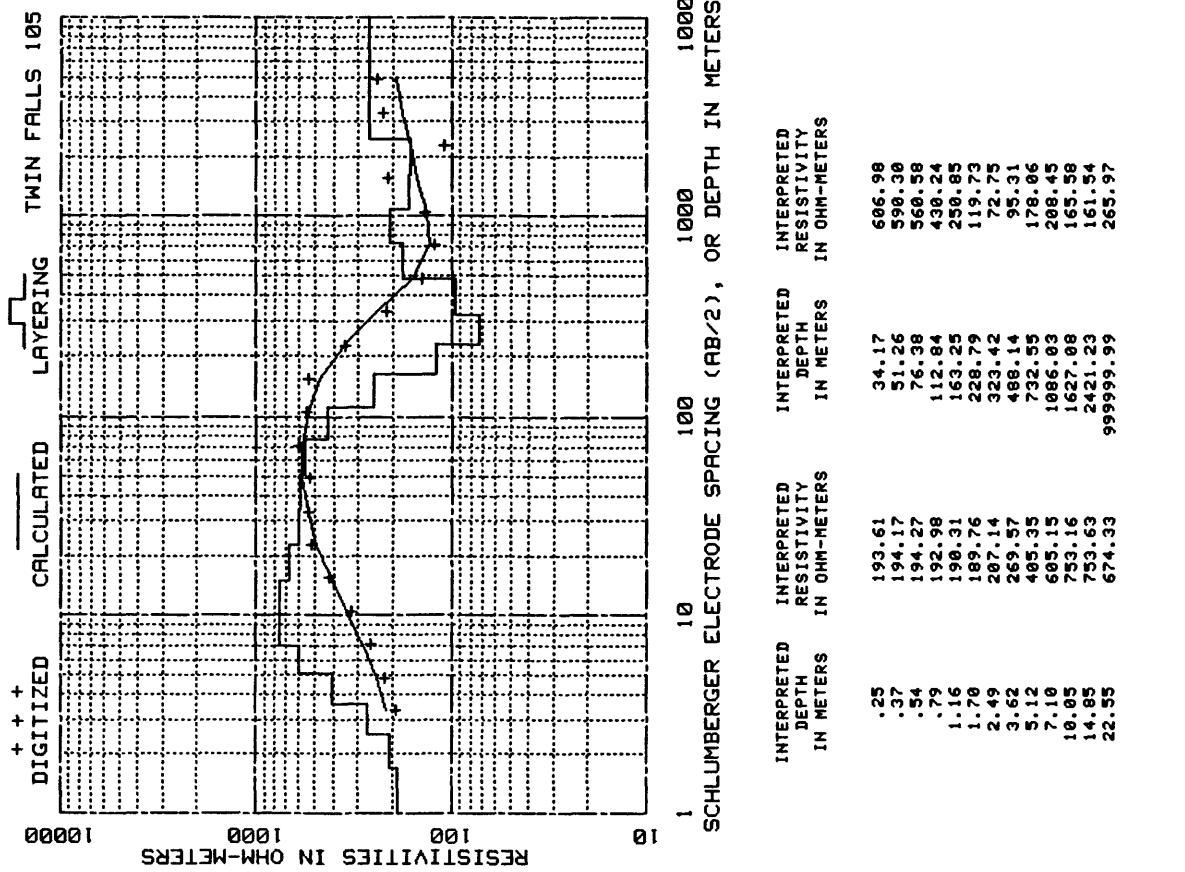


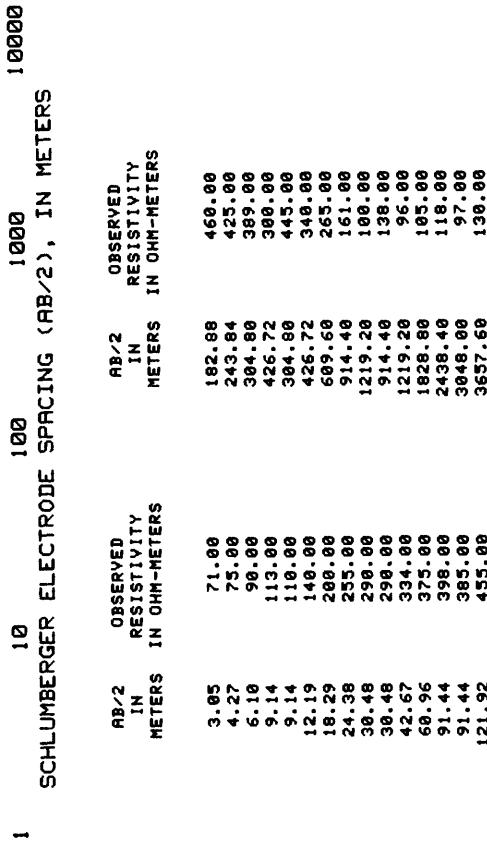
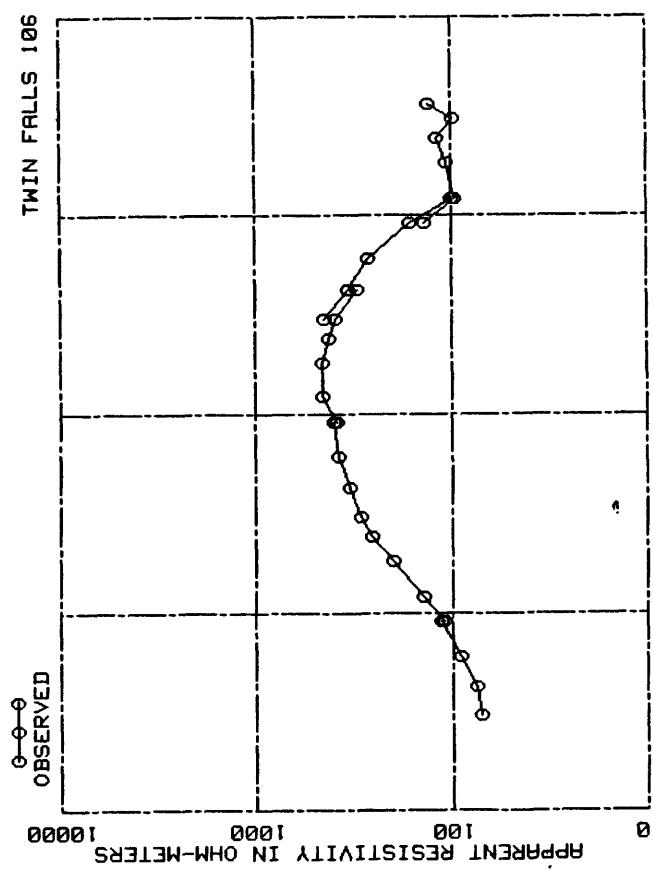
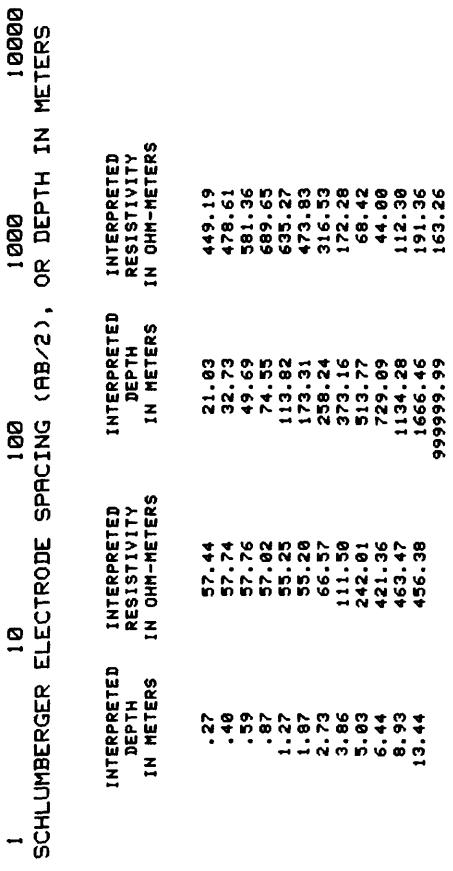
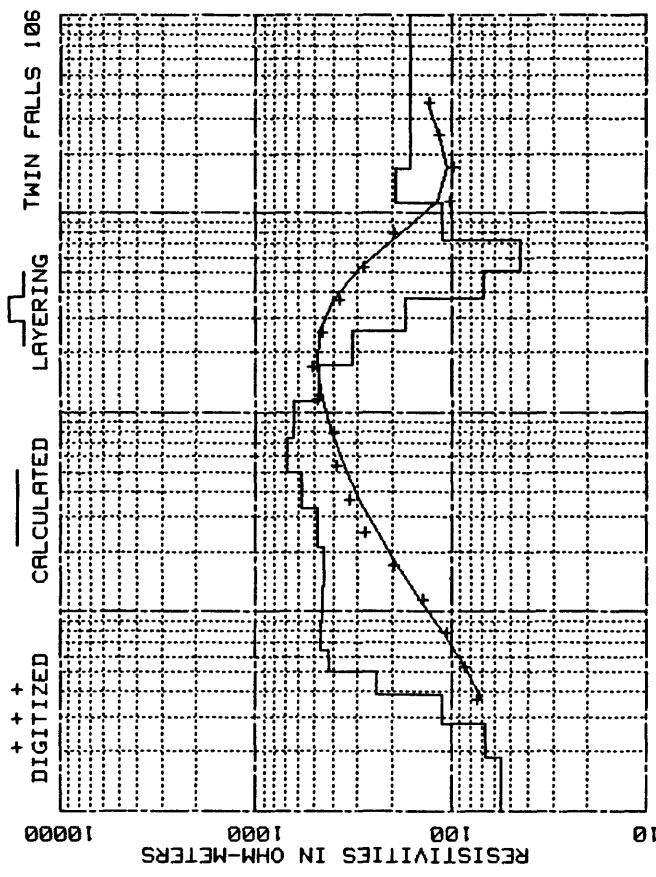
AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS	AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS
3.05	85.00	182.88	320.00
4.27	100.00	243.84	246.00
6.10	115.00	233.00	304.80
9.14	141.00	426.72	174.00
9.14	140.00	394.98	276.00
12.19	166.00	426.72	20.00
18.29	224.00	609.60	117.00
24.38	288.00	914.40	75.00
30.48	346.00	1219.20	70.00
30.48	346.00	914.40	88.00
42.67	405.00	1219.20	94.00
60.96	475.00	1828.80	105.00
91.44	458.00	2338.40	130.00
91.44	449.00	3948.00	150.00
121.92	408.00	3657.60	163.00

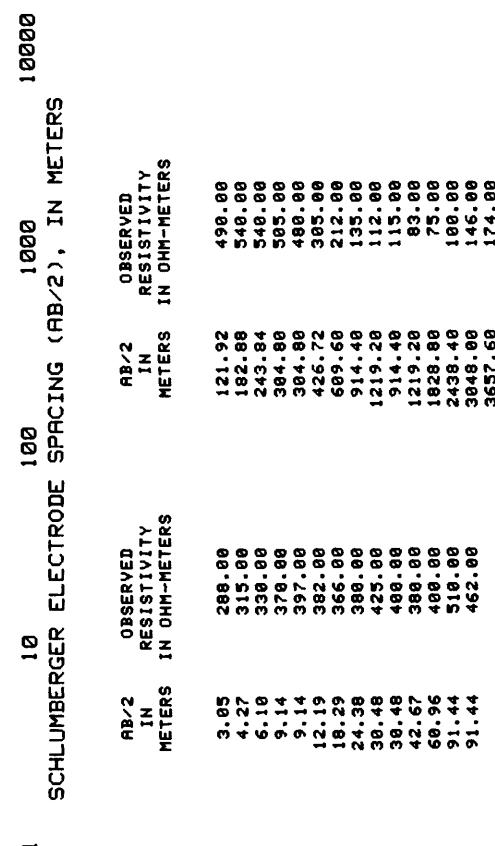
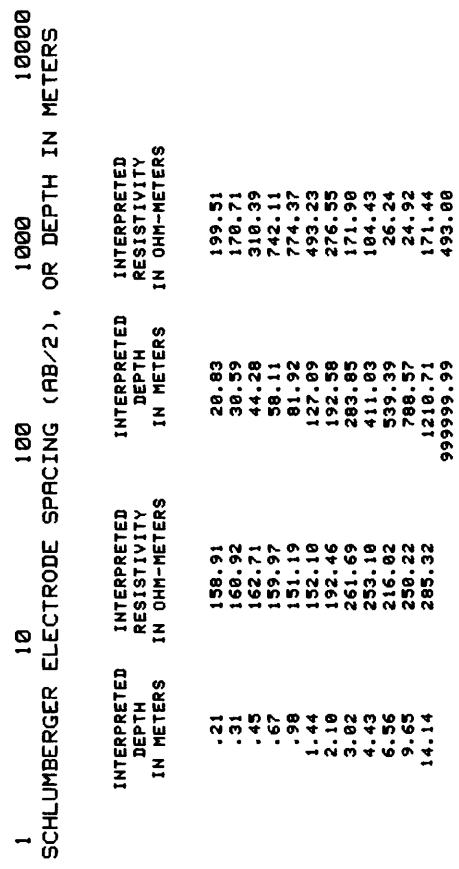
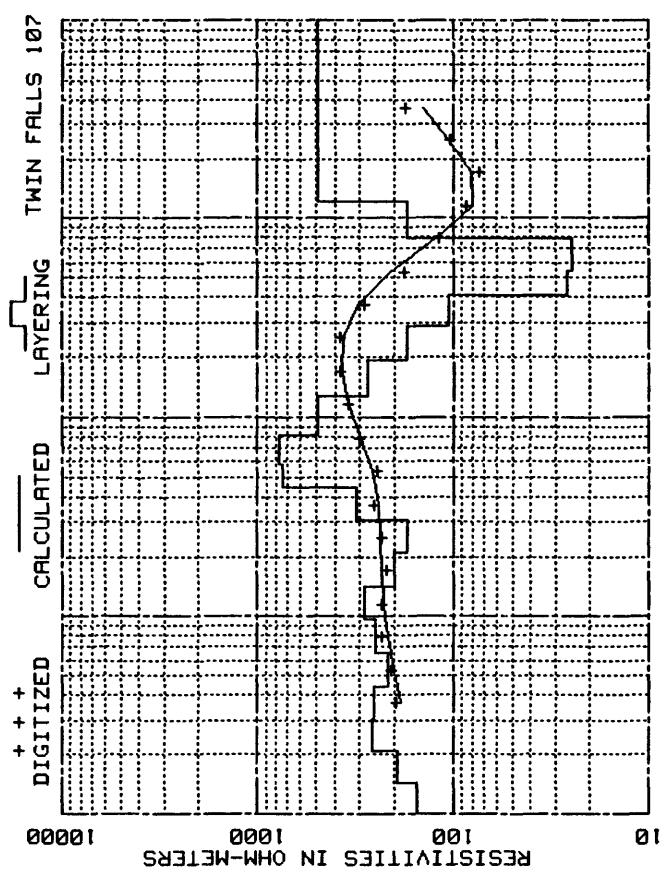
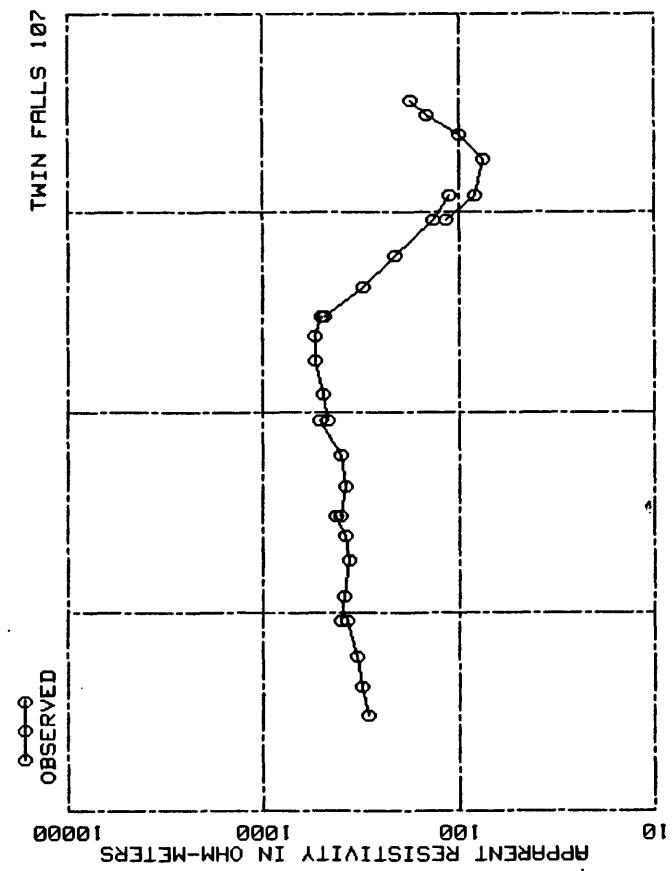


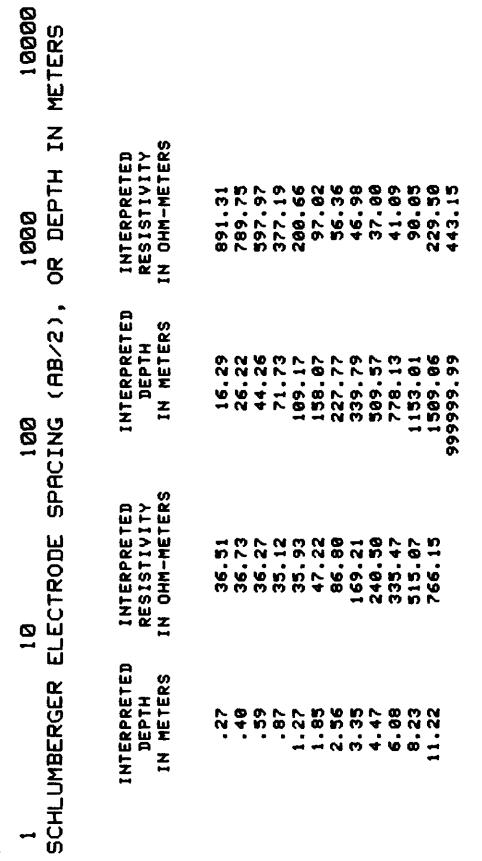
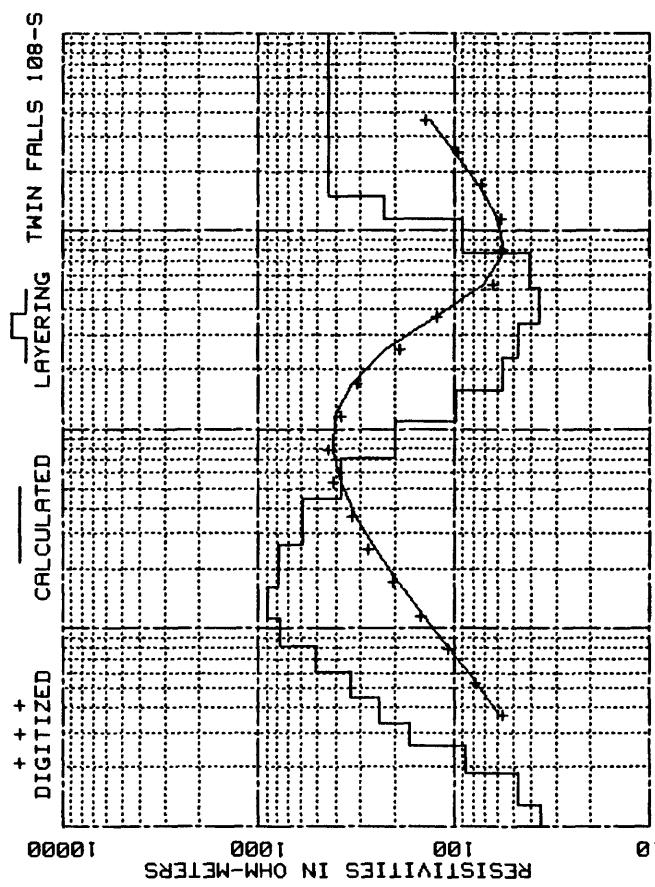
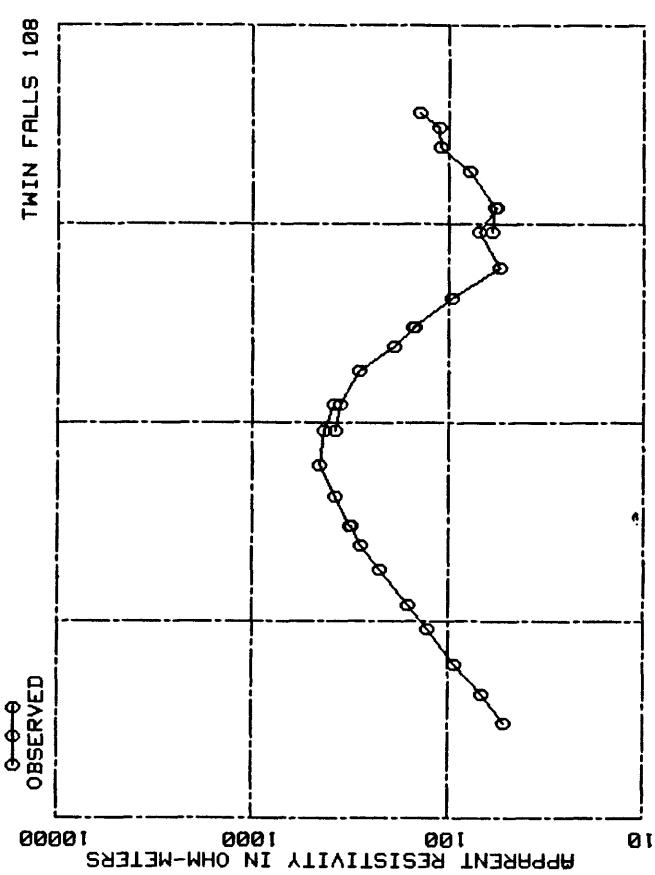
SCHLUMBERGER ELECTRODE SPACING (AB/2), OR DEPTH IN METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
1	.21	23.22	17.32	595.83
10	.31	23.65	27.03	494.72
100	.45	25.01	41.33	516.97
1000	.67	24.11	61.13	715.96
10000	.98	19.56	89.83	816.86
100000	1.43	19.97	135.61	562.78
	1.97	50.06	197.13	265.04
	2.83	98.66	277.32	125.59
	4.83	207.66	398.05	85.62
	5.91	334.17	588.74	72.96
	8.72	482.43	885.51	70.91
	11.32	926.45	1338.96	125.09
				999999.99
				473.33

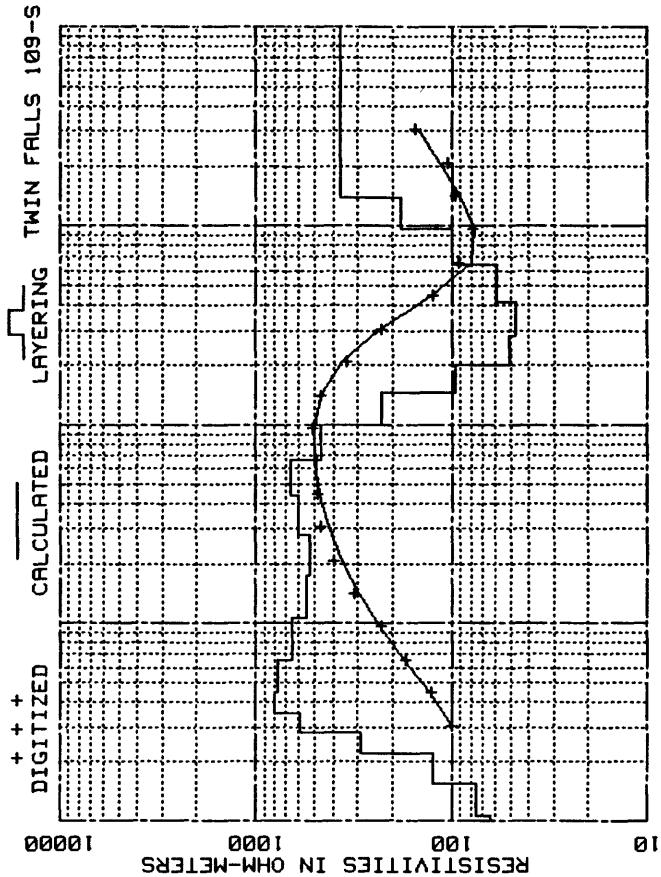
AB/2	OBSERVED IN RESISTIVITY METERS IN OHMMETERS	AB/2 IN METERS	OBSERVED IN RESISTIVITY IN OHMMETERS
3.05	25.66	91.44	330.00
4.22	31.66	121.92	385.00
6.19	42.66	180.88	420.00
9.14	64.56	243.84	400.00
9.14	66.66	304.96	288.00
12.19	88.66	30.80	330.00
18.29	138.66	426.72	235.00
24.38	175.66	68.68	178.00
30.48	192.66	91.40	110.00
42.67	220.66	914.40	128.00
38.48	215.66	1219.20	180.00
42.67	252.66	1829.80	130.00
60.96	287.66	2439.40	142.00
91.44	318.66	3044.90	164.00
		3657.60	238.00



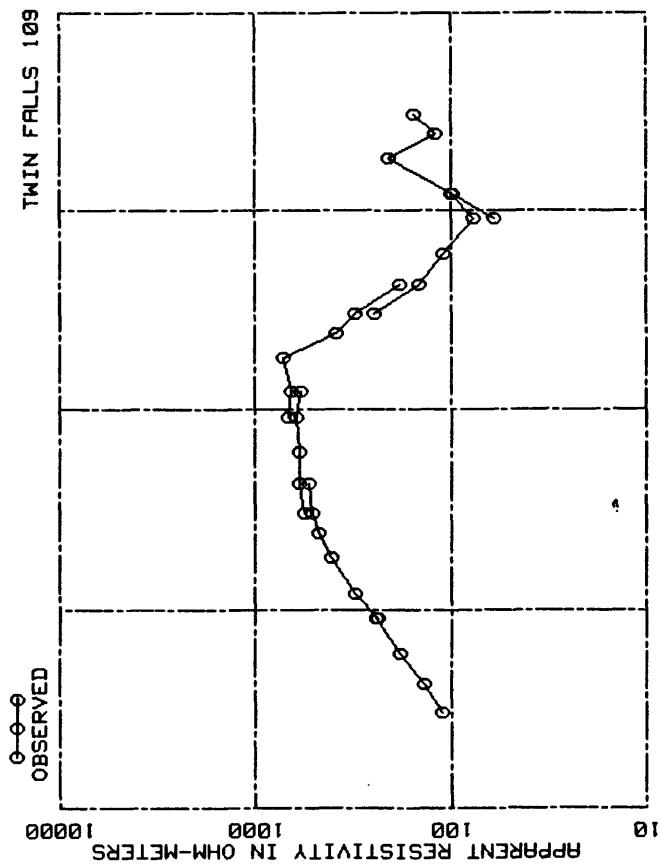




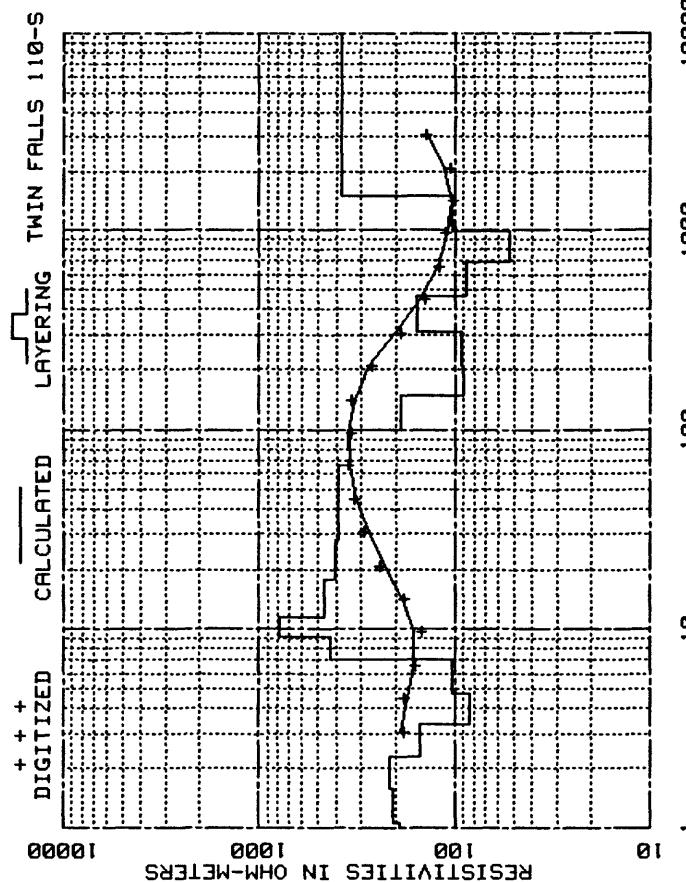




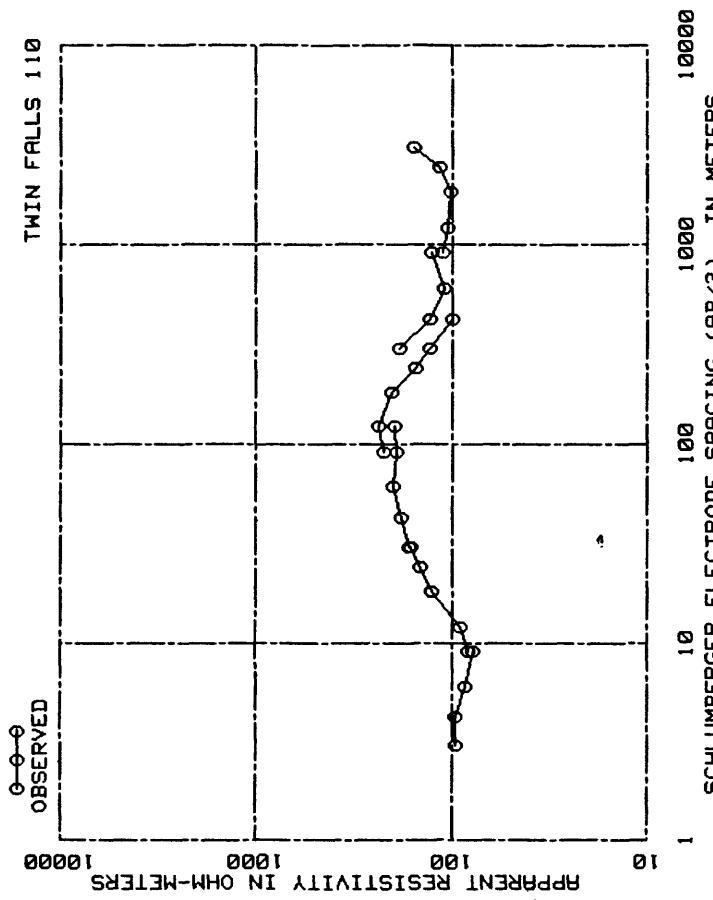
SCHLUMBERGER ELECTRODE SPACING (AB/2), OR DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS
1	65.70	65.74	554.46	525.69
.23	.34	.26.97		
		66.27		
		66.03	43.33	
			65.73	66.53
			64.21	
			63.07	99.41
			63.07	466.04
			74.48	227.64
			144.77	
			125.89	96.00
			281.45	
			289.02	50.05
			281.13	
			417.52	46.86
			596.41	
			888.46	59.18
			642.34	
			778.16	98.93
			974.03	
			1381.16	181.76
			653.06	
			99999.99	372.17



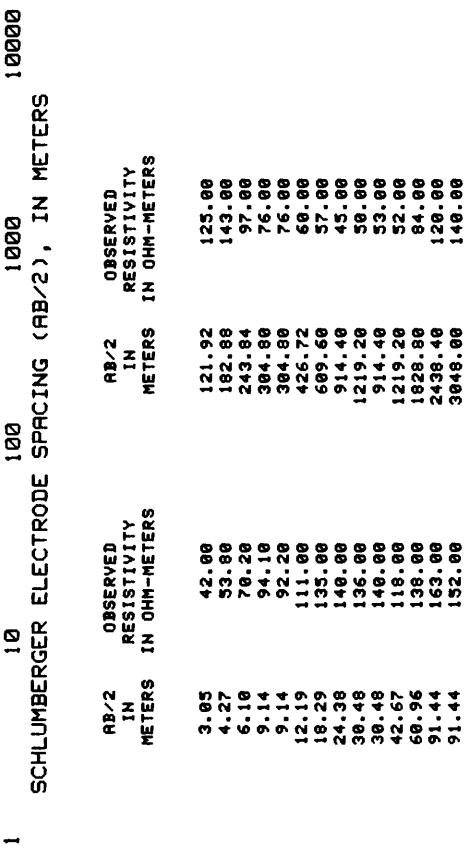
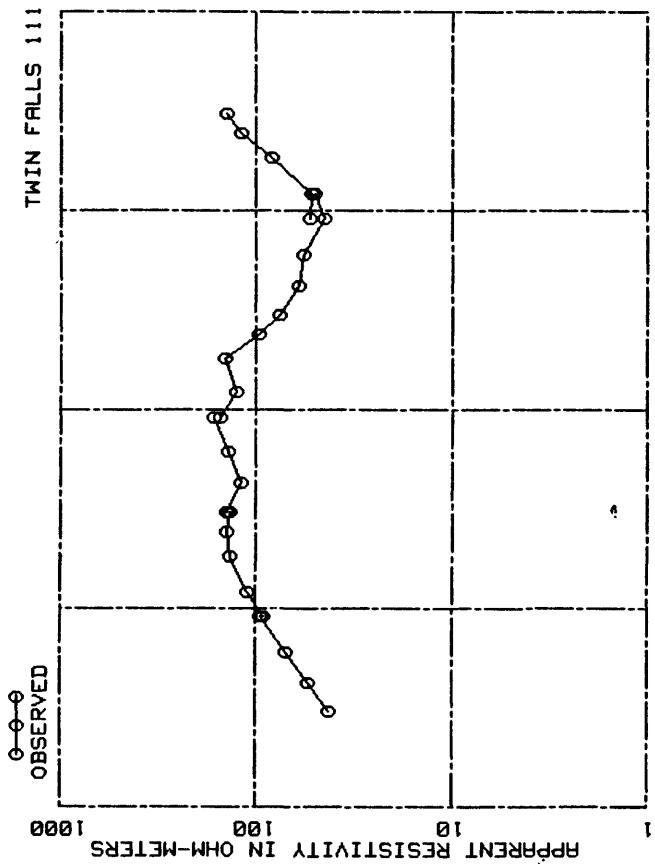
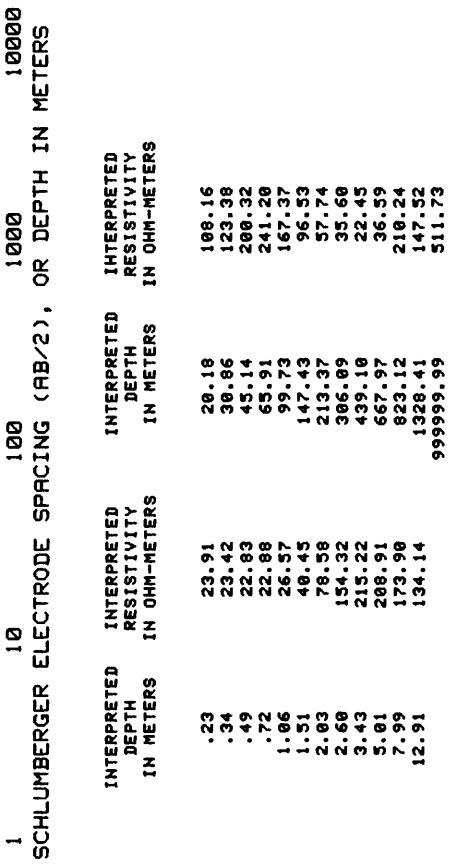
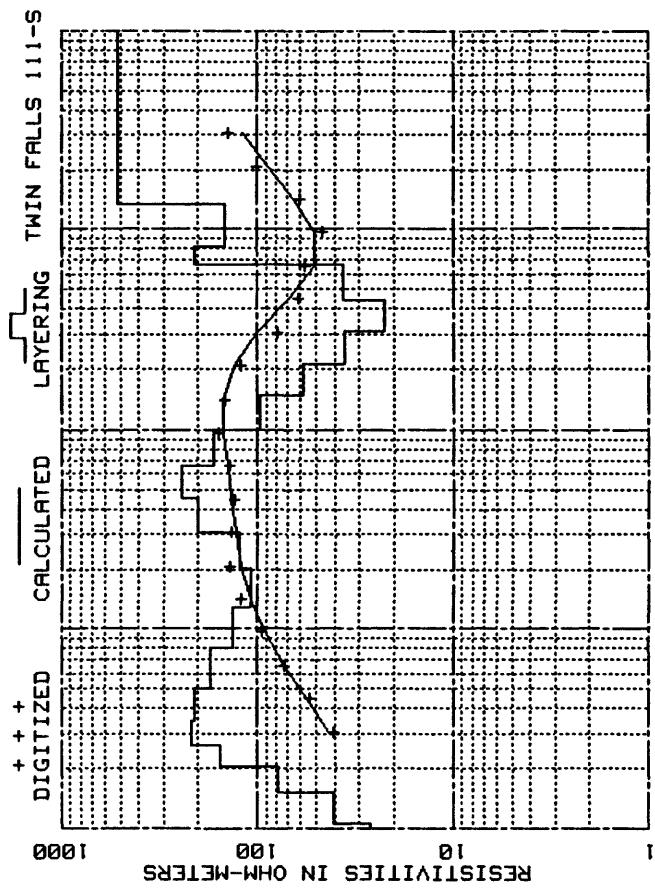
AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS	AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS	AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS
3.05	112.00	91.44	680.00	1.23	65.70
4.27	137.00	121.92	655.00	.34	.34
6.18	181.00	182.88	710.00	.49	.49
9.14	242.00	243.84	382.00	.72	.72
9.14	238.00	384.98	310.00	1.06	1.06
12.19	305.00	426.72	180.00	1.55	1.55
18.29	498.00	384.98	245.00	2.19	2.19
24.38	472.00	426.72	146.00	2.83	2.83
30.48	515.00	609.60	110.00	3.59	3.59
42.67	535.00	914.40	77.00	4.53	4.53
30.48	560.00	1219.20	100.00	6.57	6.57
42.67	590.00	914.40	60.00	10.63	10.63
60.96	590.00	1219.20	97.00		
91.44	620.00	1828.80	286.00		
121.92	580.00	2438.40	120.00		
		3048.00	152.00		

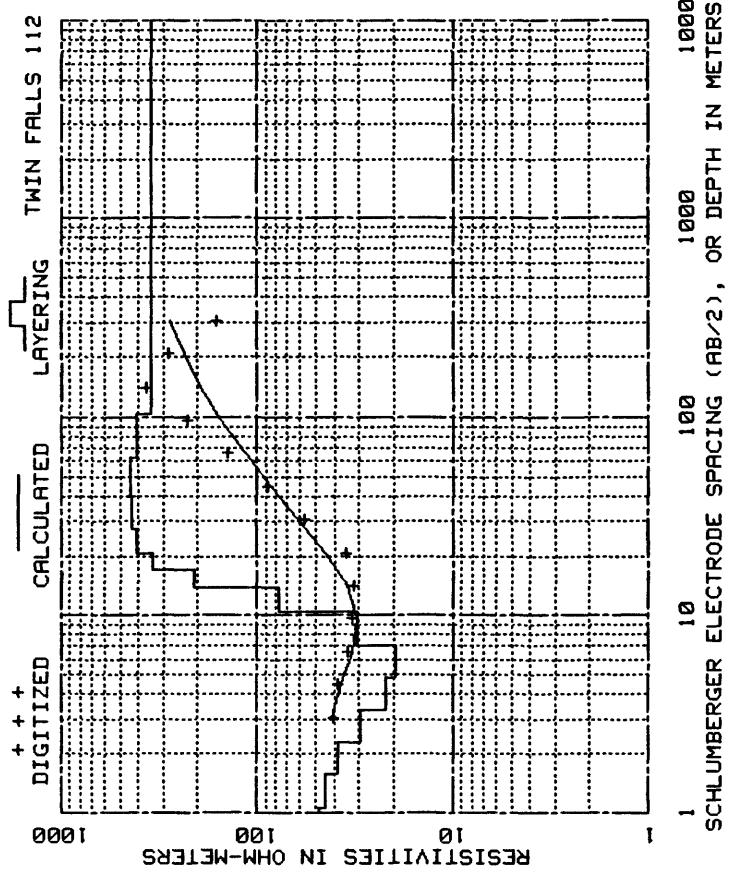


SCHLUMBERGER ELECTRODE SPACING (AB/2), OR DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
.23	191.51	17.82	468.47
.34	191.71	28.98	410.71
.49	190.73	43.58	390.19
.72	189.39	66.49	390.34
1.06	192.34	100.29	341.72
1.56	208.78	147.36	189.58
2.28	217.65	208.75	98.79
3.34	151.08	308.95	93.99
4.78	83.56	465.71	154.99
7.06	102.97	687.98	86.95
9.15	428.59	994.19	52.84
11.58	779.56	1486.83	102.73

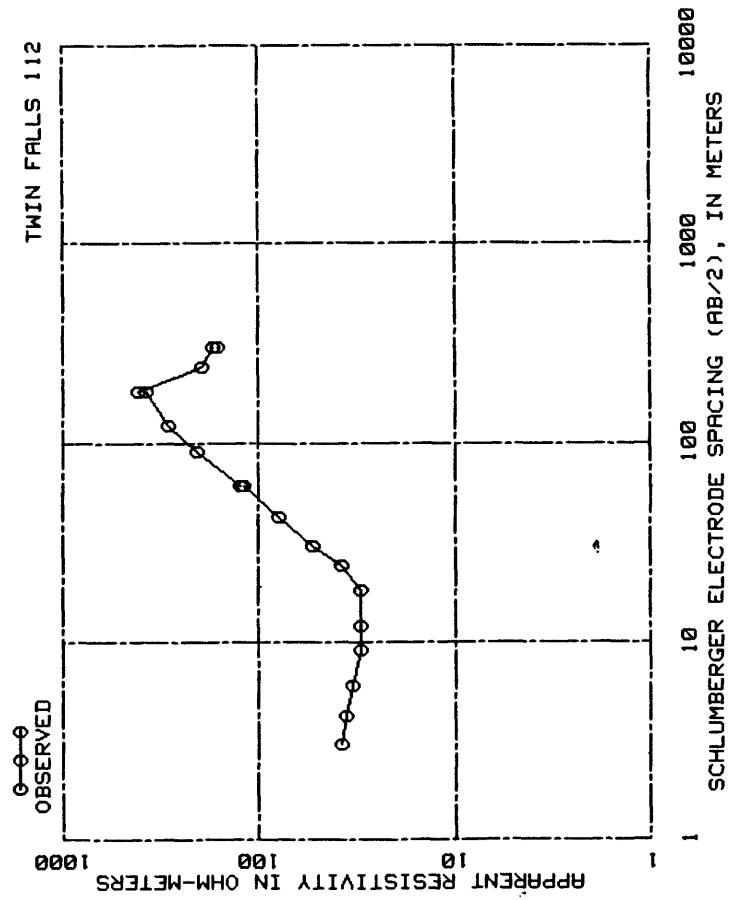


AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS	AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS
3.05	96.00	91.44	225.00
4.27	96.00	121.92	235.00
6.10	86.00	182.88	205.00
9.14	78.00	243.84	154.00
9.14	83.00	304.80	130.00
12.19	91.00	426.72	100.00
18.29	126.00	384.88	185.00
24.38	145.00	422.72	130.00
30.48	162.00	609.60	110.00
30.48	165.00	914.40	126.00
42.67	181.00	914.40	112.00
60.96	200.00	1219.20	105.00
91.44	192.00	1822.80	102.00
121.92	195.00	2438.40	116.00
		3046.00	155.00

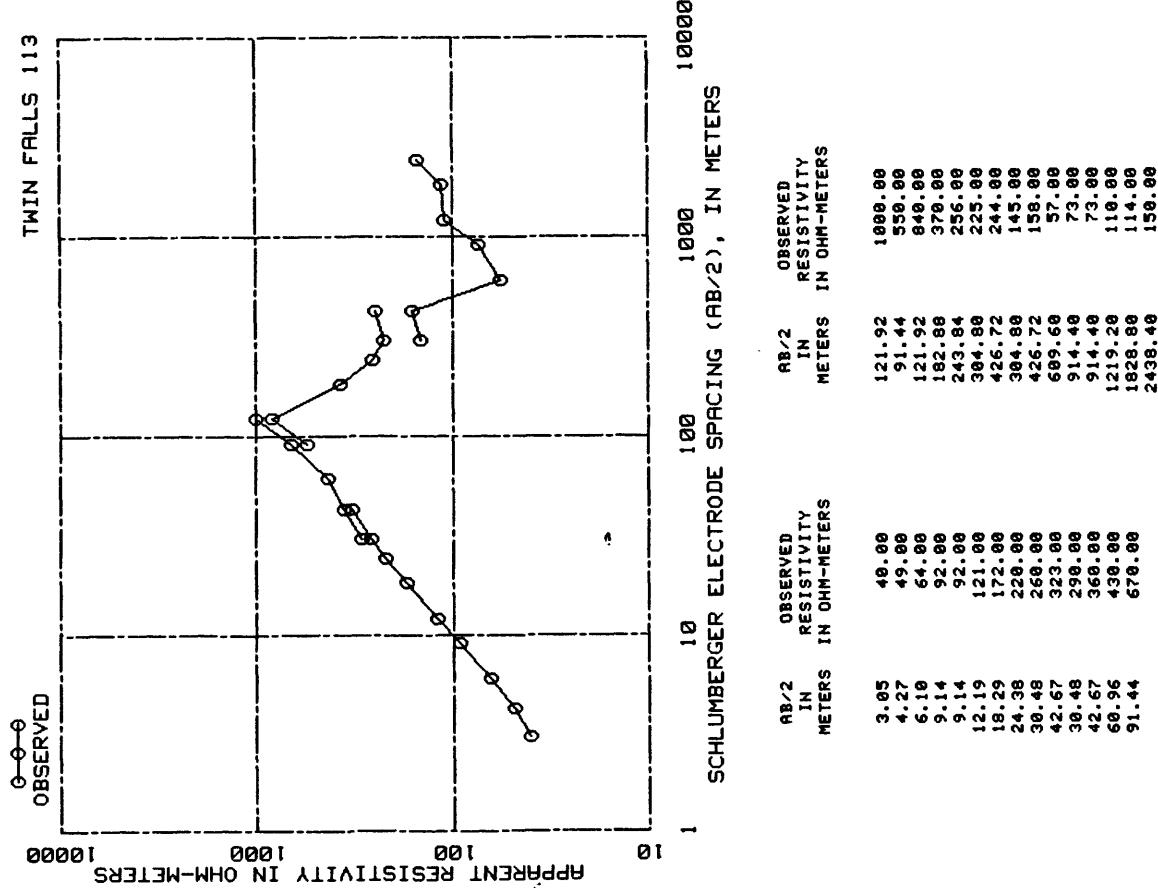
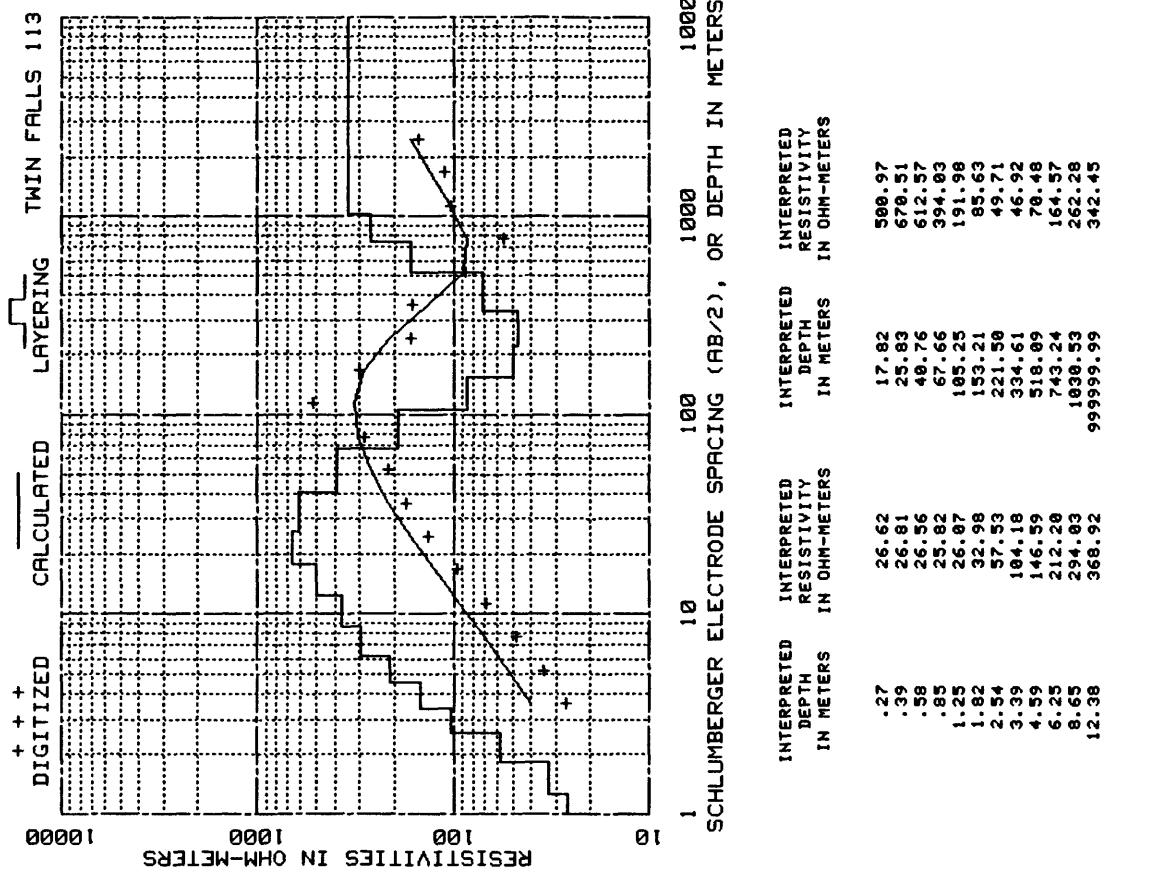


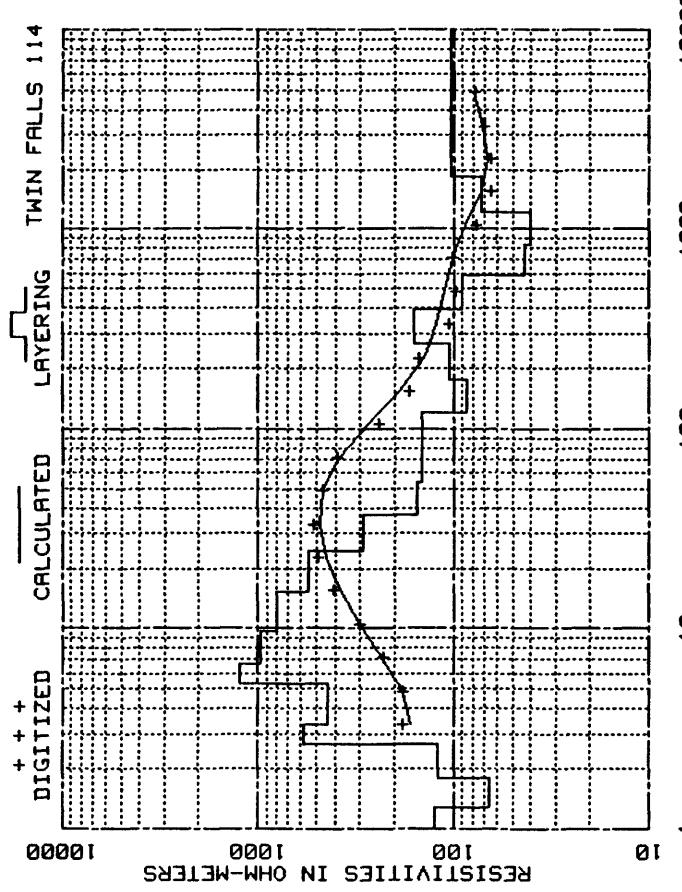
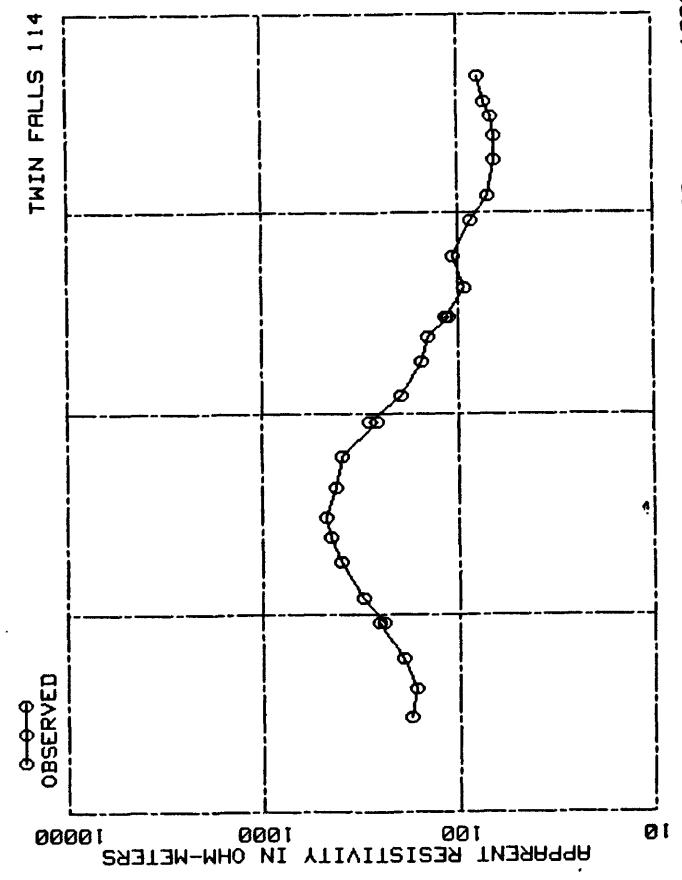


SCHLUMBERGER ELECTRODE SPACING (AB/2), OR DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
1	.23	49.78	7.85
.34	49.71	16.41	38.81
.49	49.57	13.95	77.55
.72	49.23	16.94	287.19
1.06	48.10	48.10	340.49
1.56	45.88	27.49	488.57
2.28	38.83	39.71	436.32
3.33	29.84	62.54	439.55
4.83	21.79	103.53	414.39
		99999.99	348.93

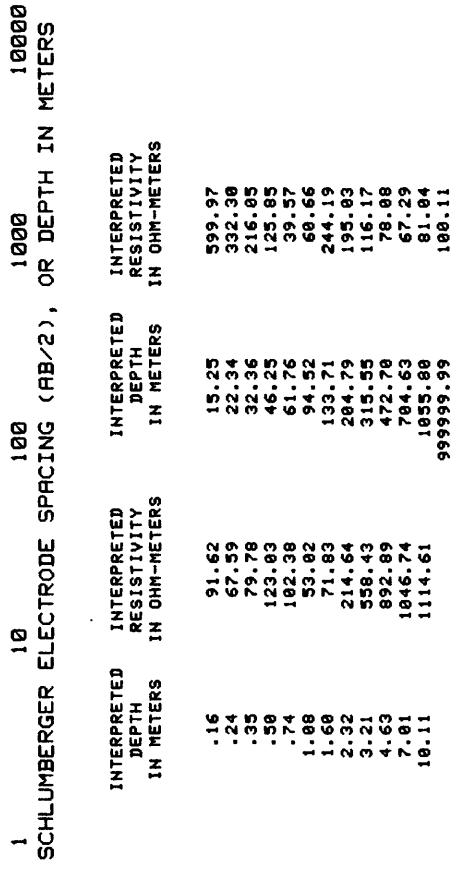
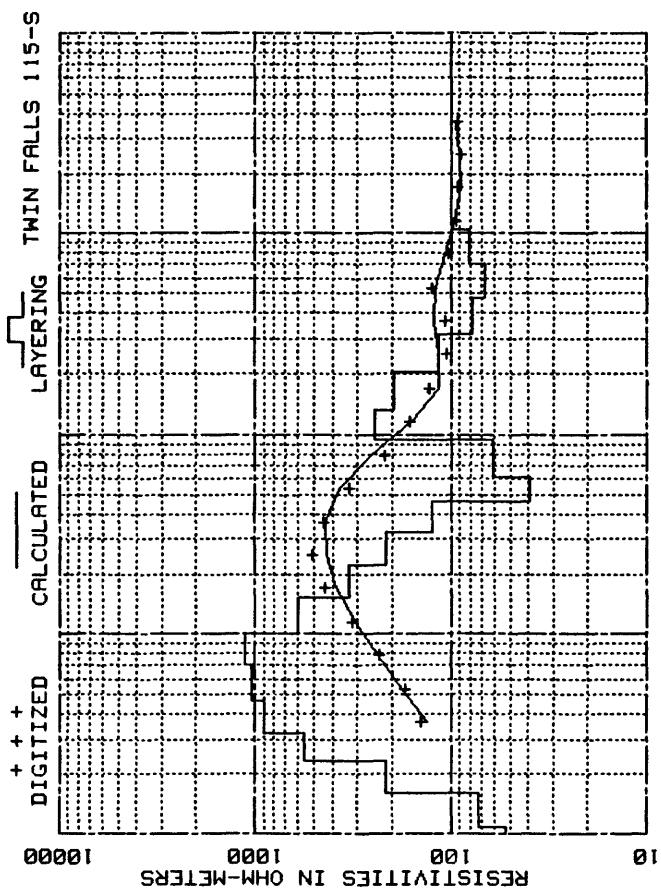
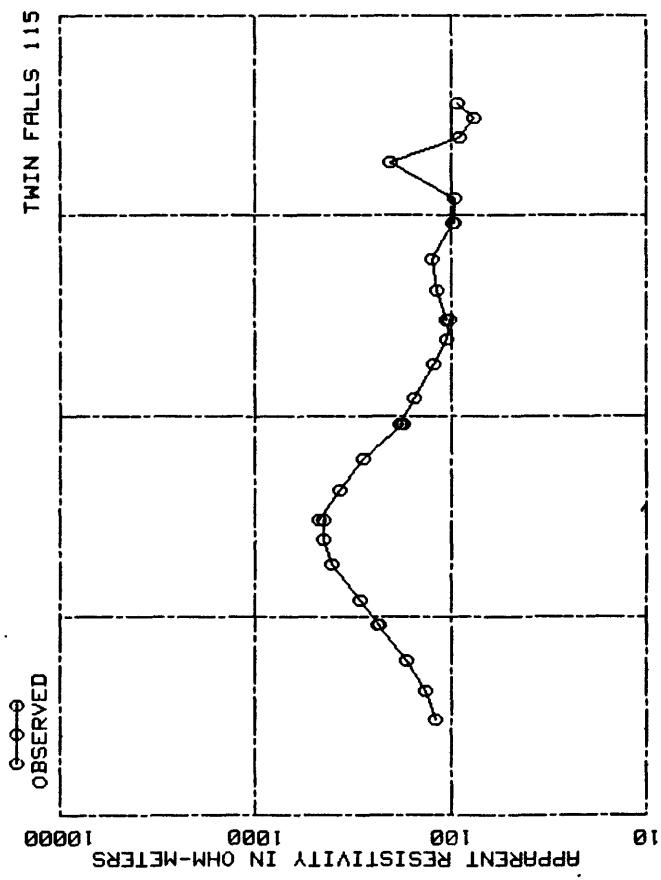


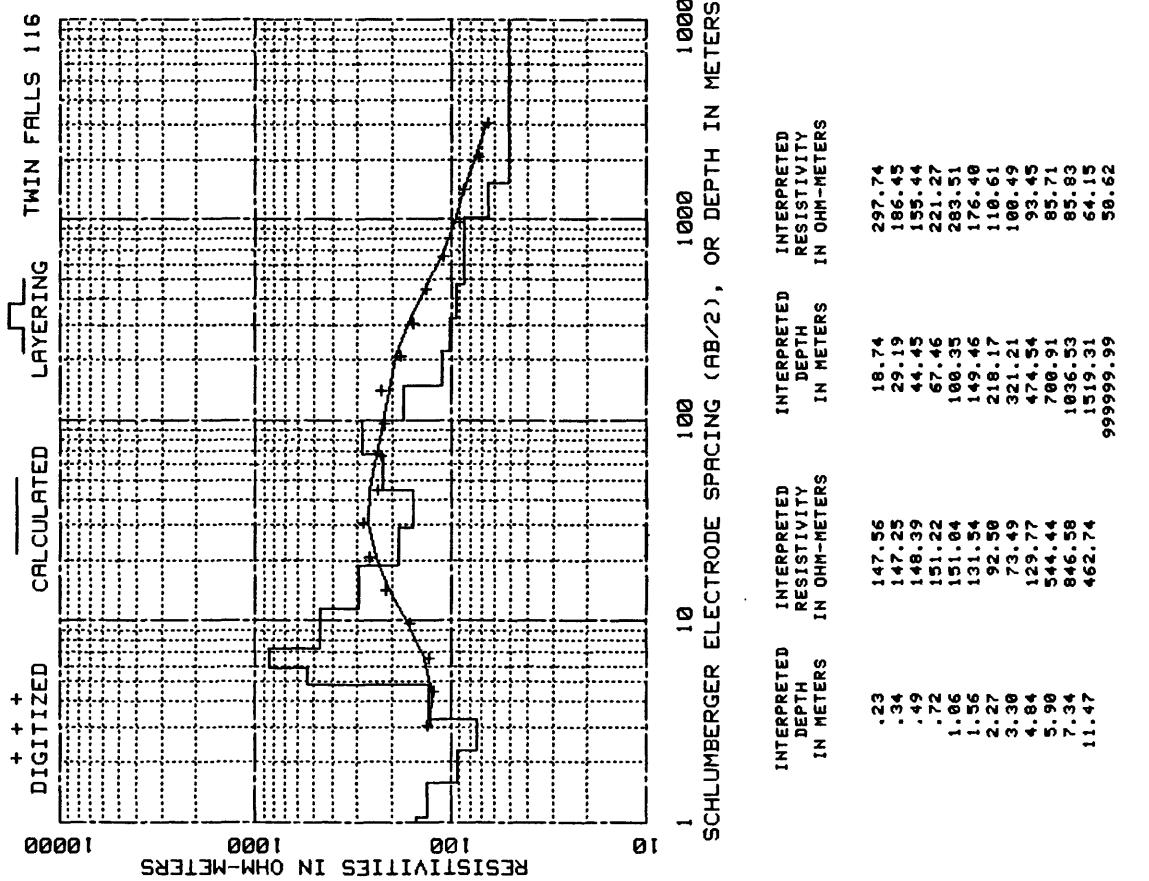
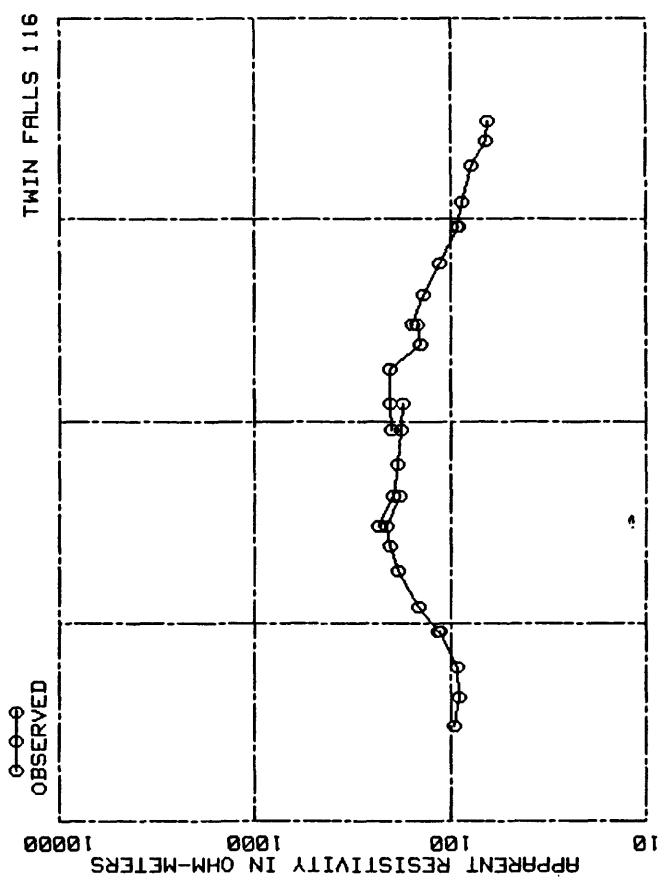
AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS	AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS
3.05	38.00	42.67	78.00
4.27	36.00	60.96	116.00
6.18	33.00	60.96	124.00
9.14	30.39	91.44	205.00
9.14	30.00	91.44	205.00
12.19	30.00	121.92	288.00
18.29	30.00	182.88	375.00
24.38	38.00	182.88	418.00
30.48	53.00	243.84	195.00
30.48	53.00	304.80	178.00
		304.80	160.00

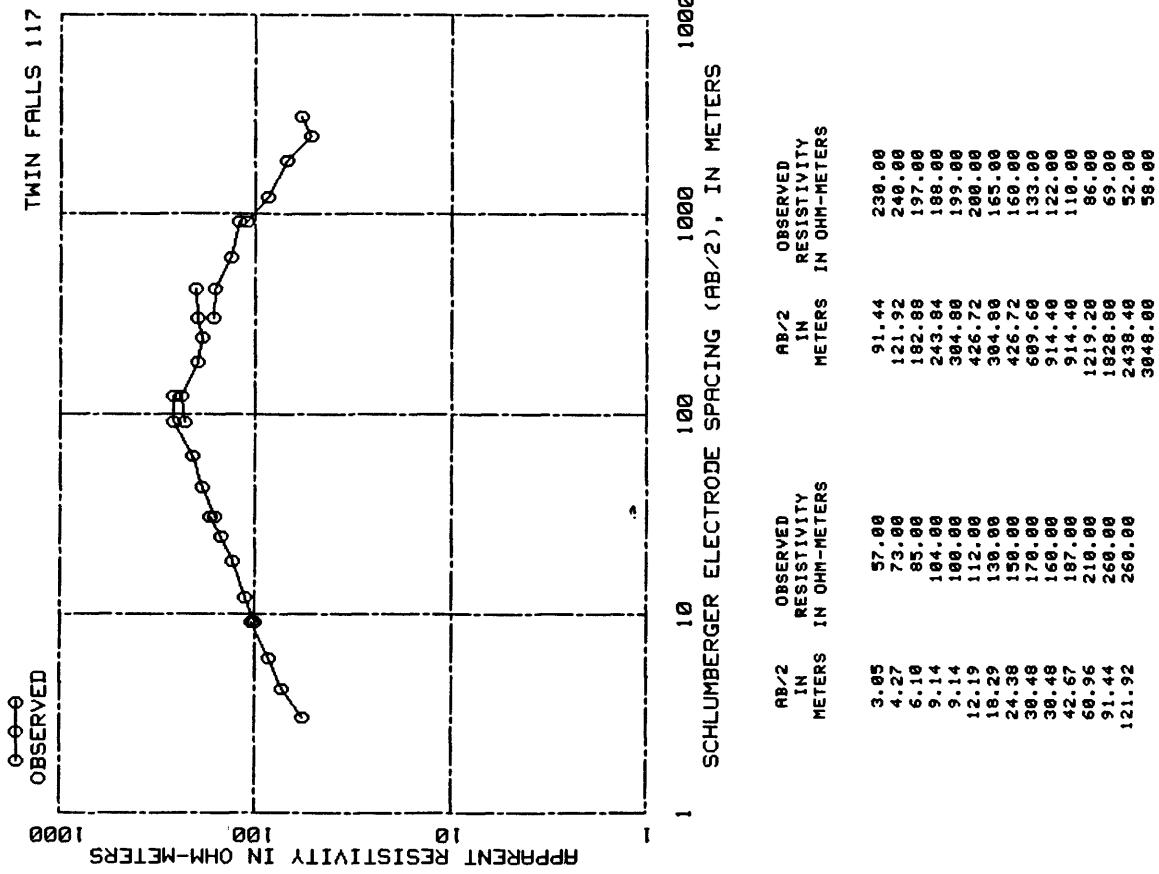
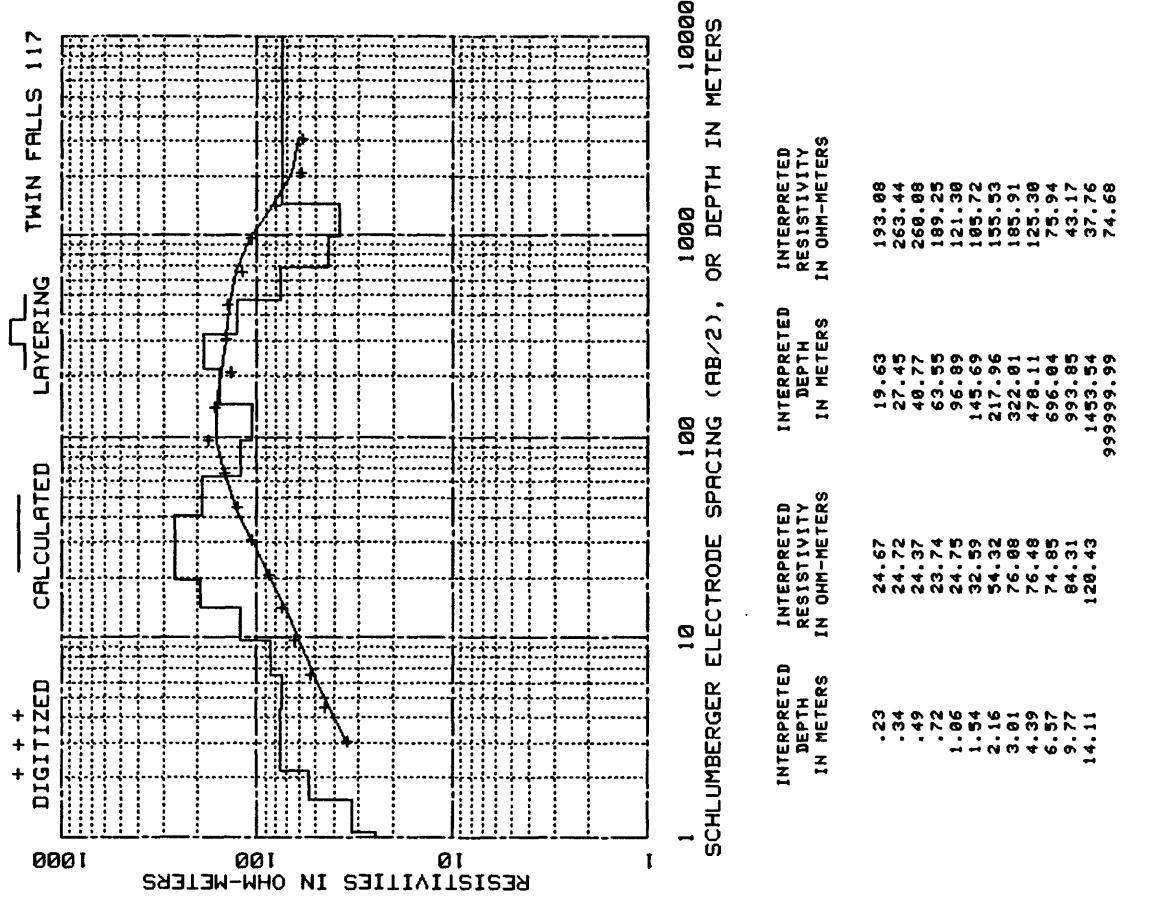


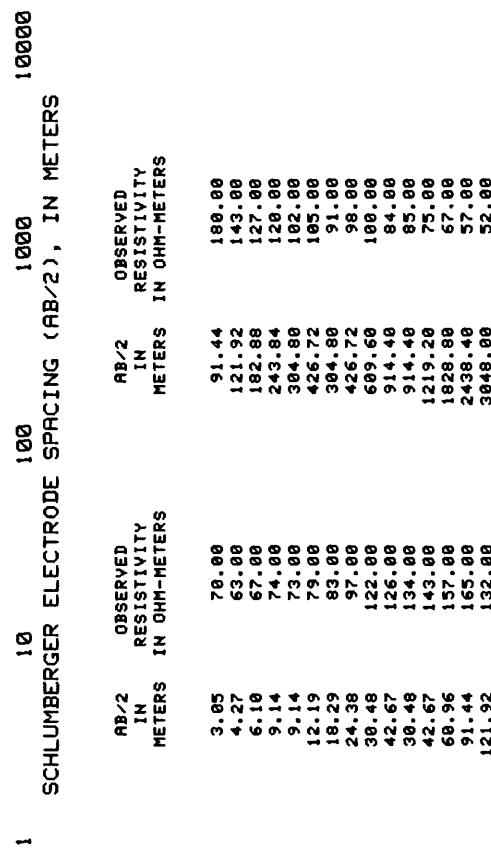
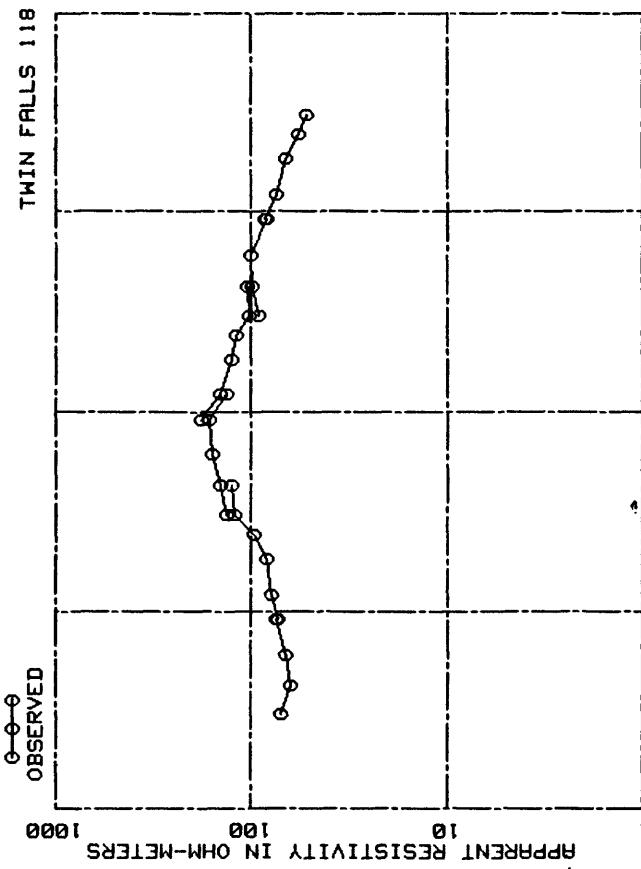
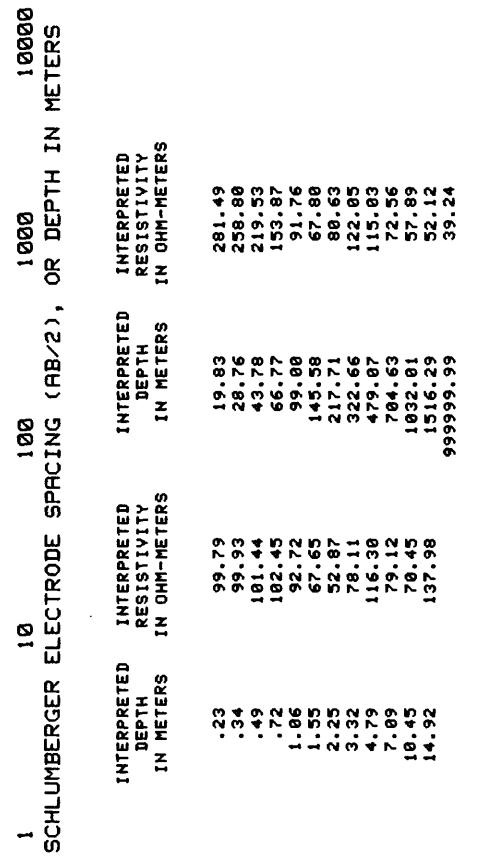
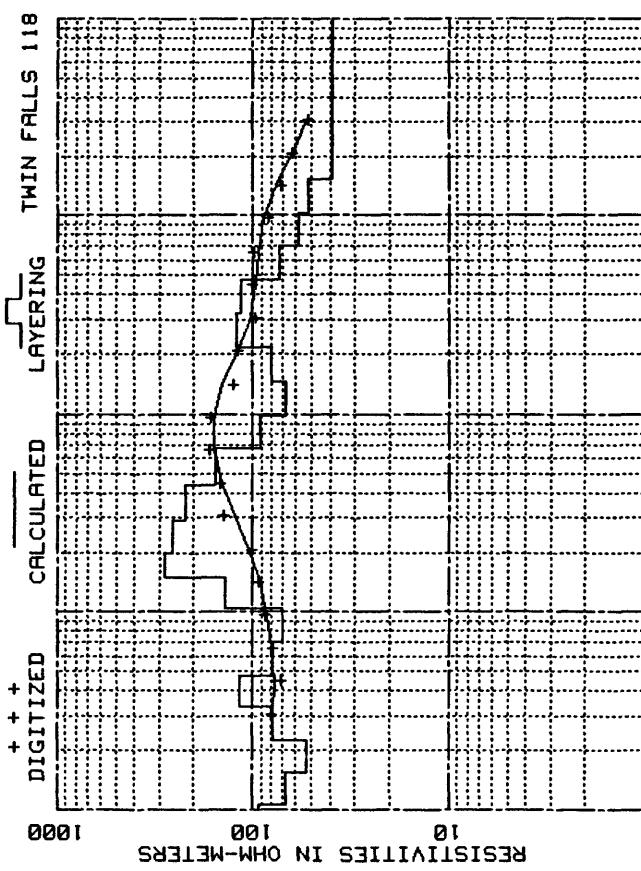


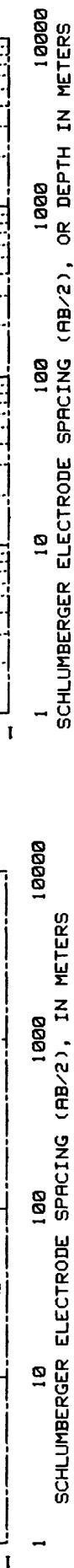
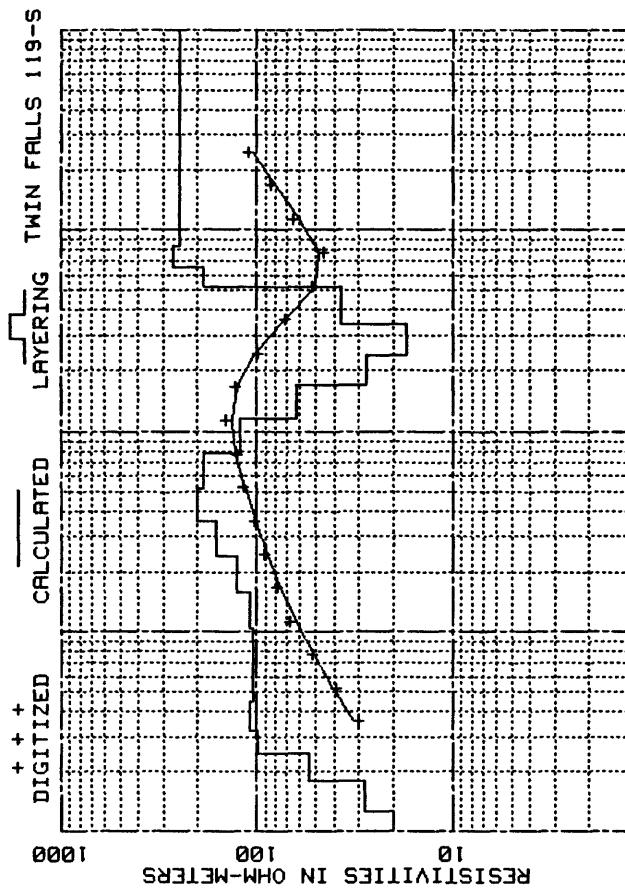
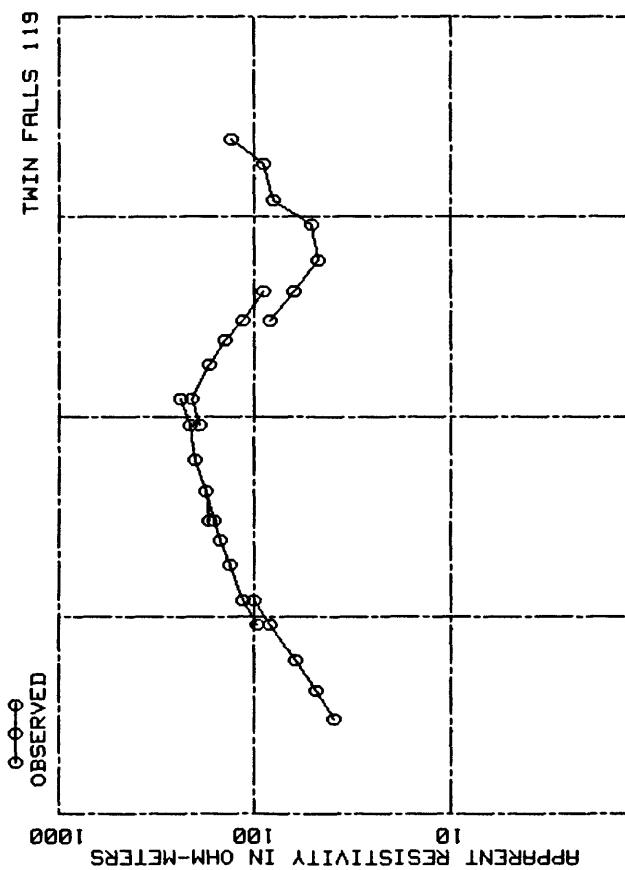
INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	SCHLUMBERGER ELECTRODE SPACING (AB/2), OR DEPTH IN METERS	
		INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
.19	259.81	24.37	555.08
.28	264.09	36.76	298.43
.41	298.12	53.36	153.21
.60	318.42	79.74	145.00
.89	258.91	120.14	145.95
1.27	125.60	175.70	85.34
1.78	65.70	264.05	105.44
2.68	119.10	393.34	159.12
3.33	587.05	582.21	90.52
5.32	438.23	828.93	43.23
6.72	1226.76	1217.60	40.58
9.89	972.29	1825.32	72.72
15.46	807.21	99999.99	103.66

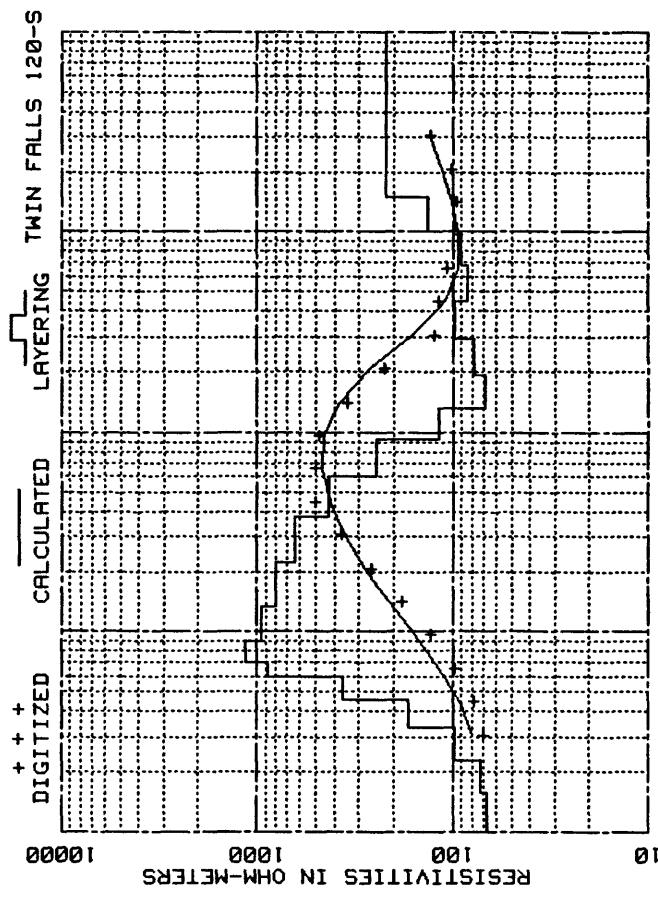




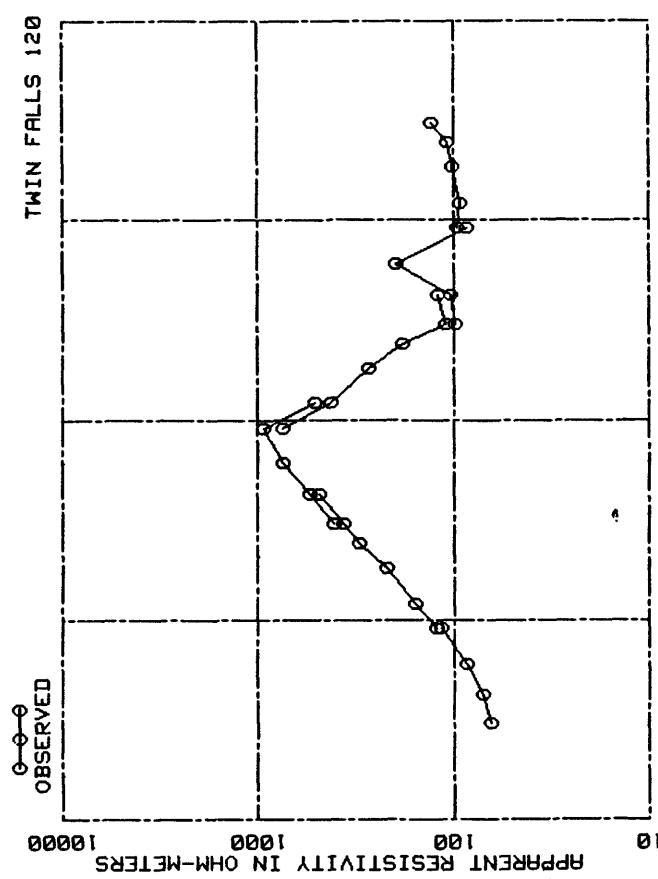




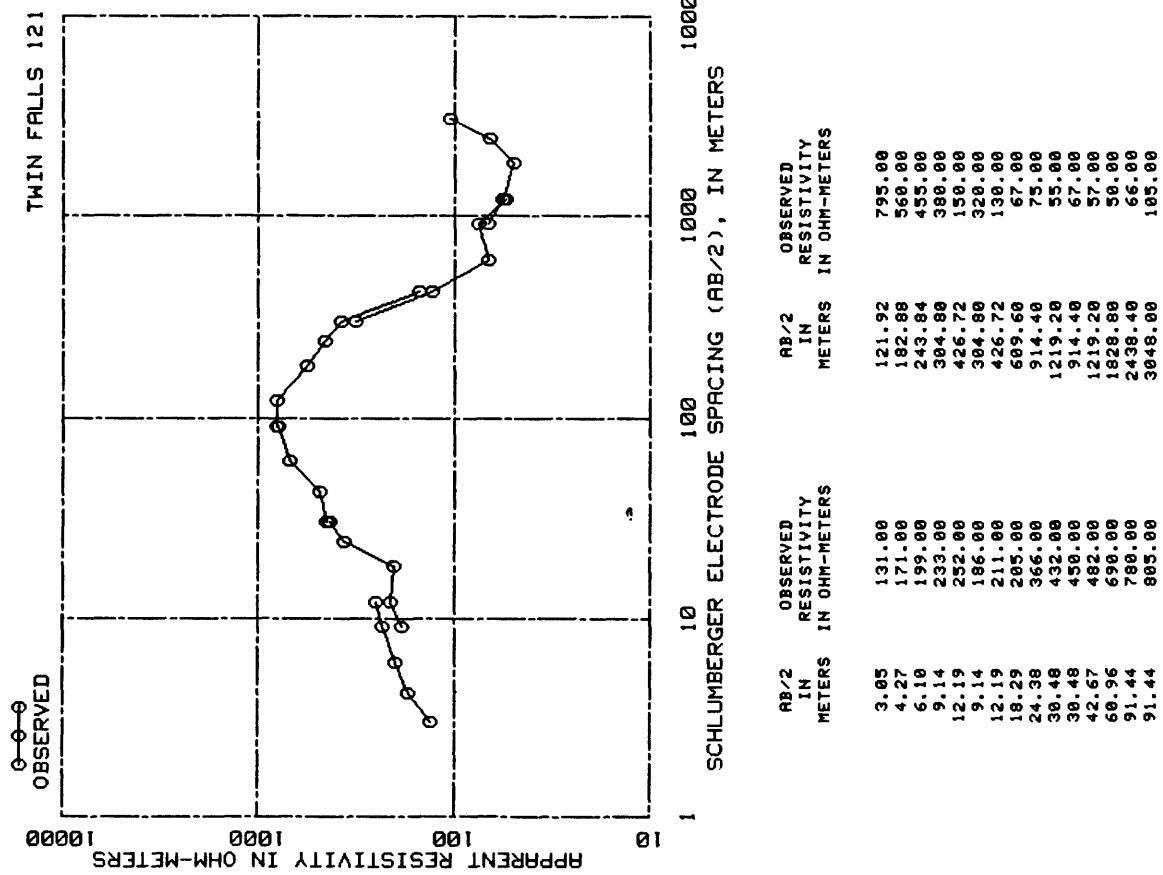
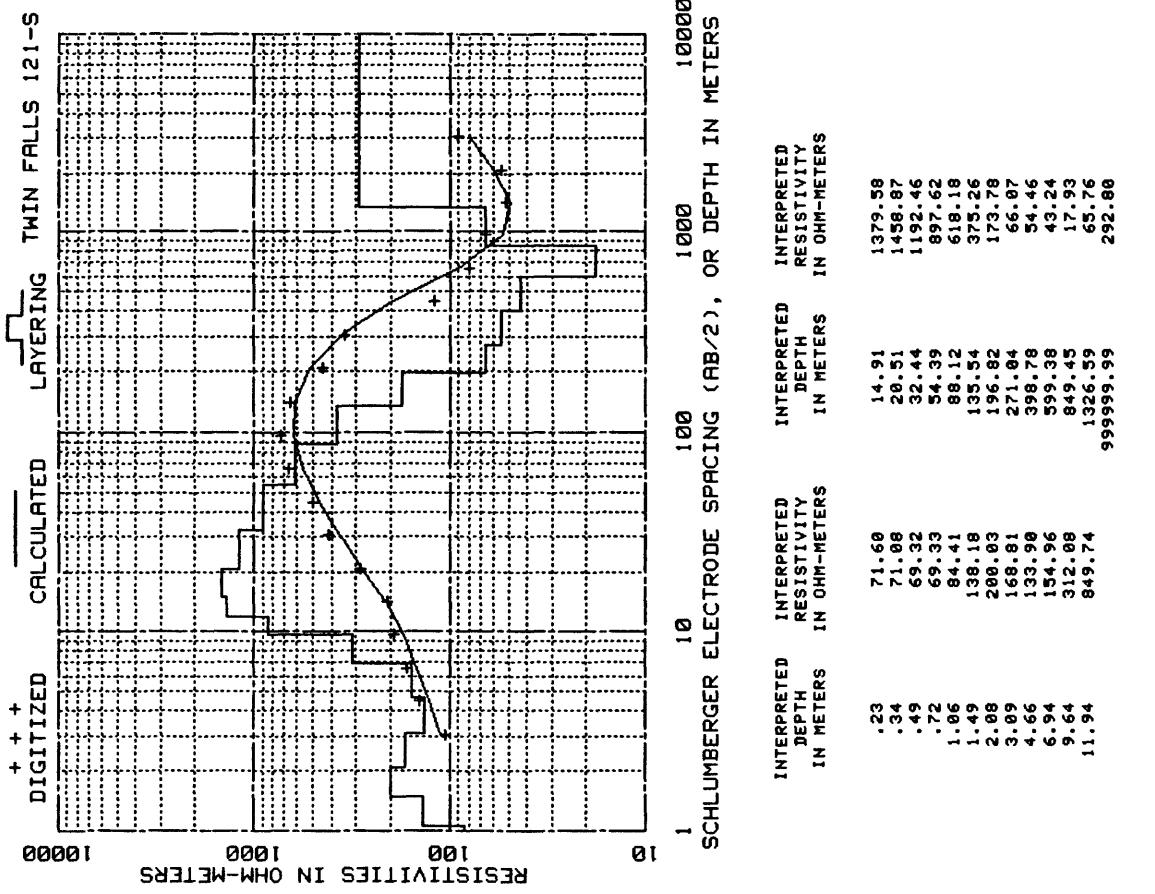


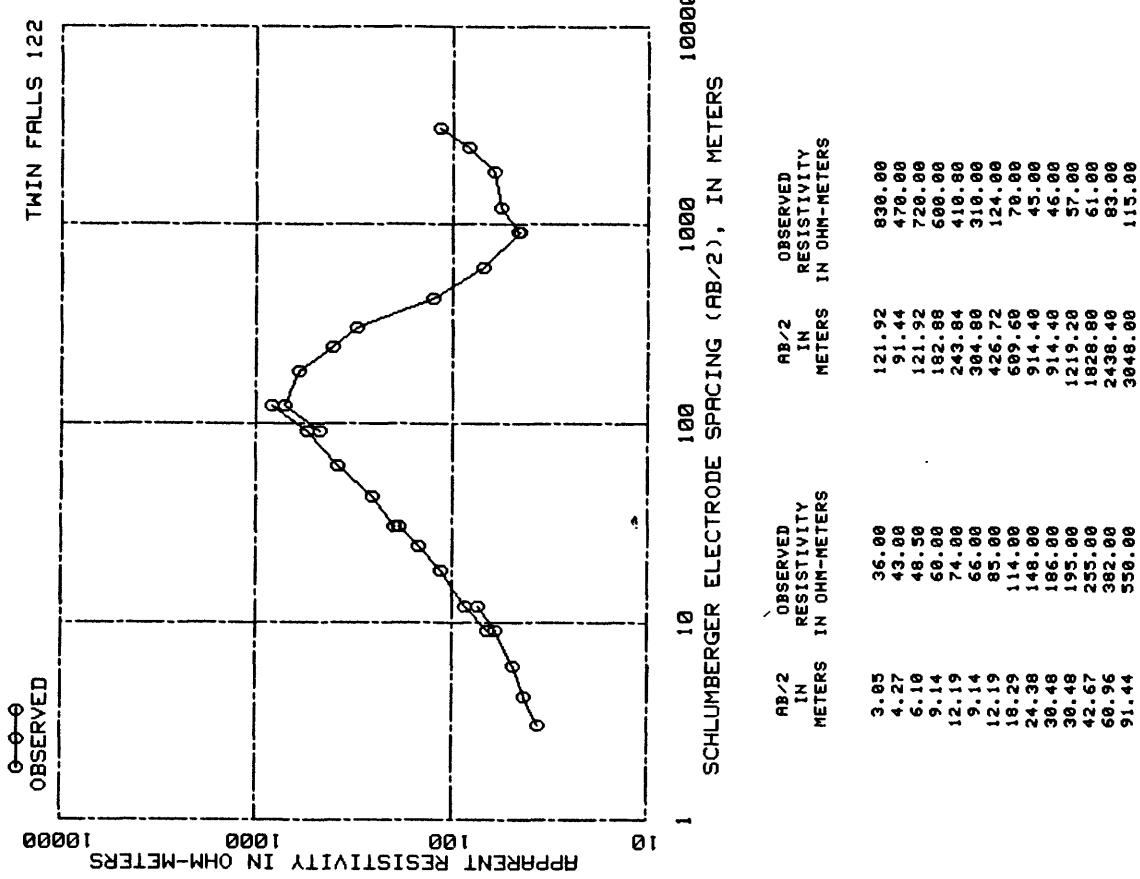
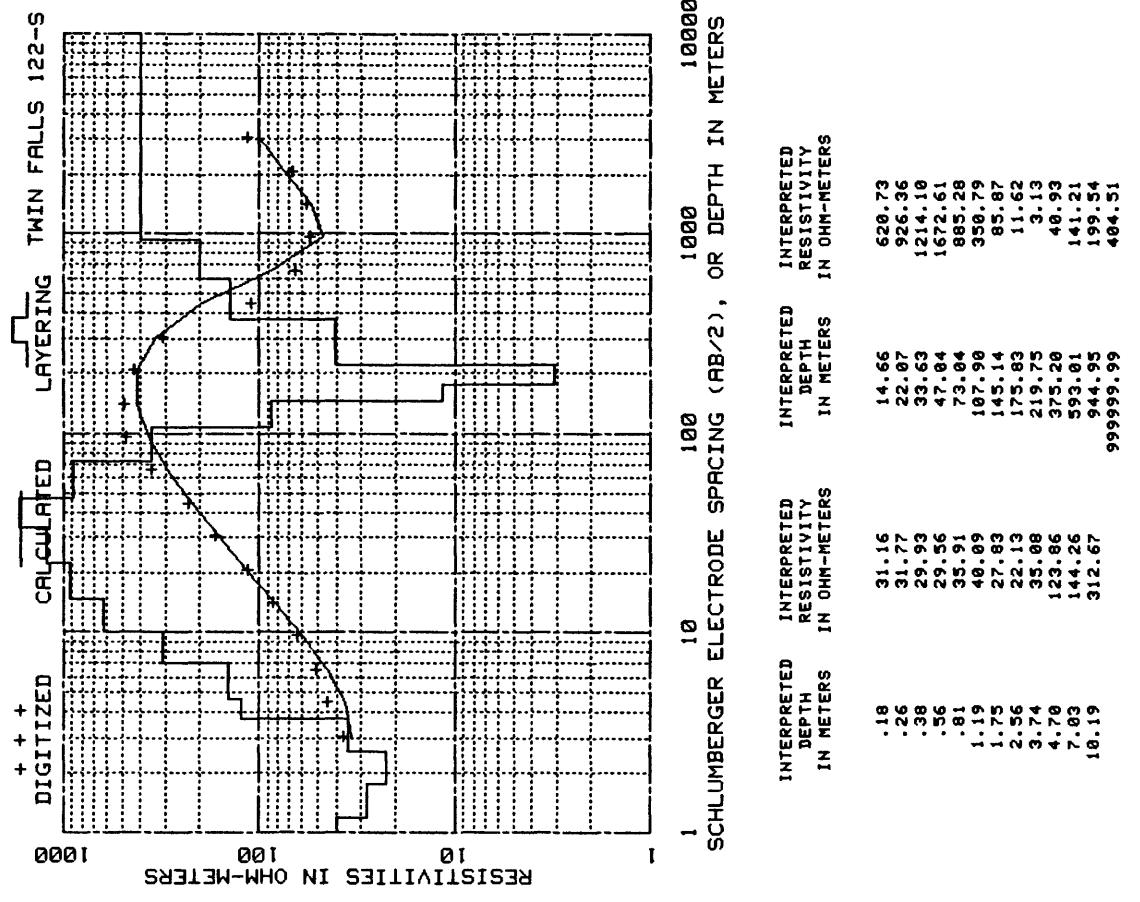


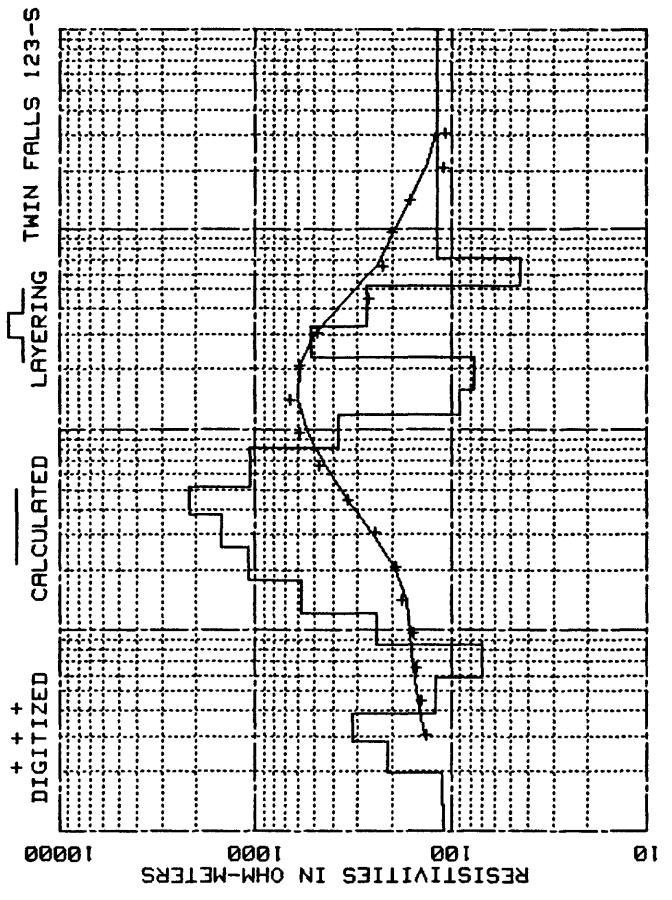
	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
.23	69.88	13.44	951.83	
.34	70.86	22.28	799.29	
.49	69.94	37.34	636.48	
.72	69.21	60.27	431.49	
1.86	67.67	92.82	243.47	
1.56	66.91	133.59	118.84	
2.28	72.93	192.38	68.83	
3.31	98.25	292.67	77.27	
4.59	169.82	448.65	97.38	
5.91	365.75	676.27	83.56	
7.12	881.55	1013.56	98.33	
9.63	1152.49	1493.33	134.31	
		99999.99	218.98	



AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS	AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS
3.05	65.00	91.44	750.00
4.27	71.00	121.92	420.00
6.19	86.00	182.88	272.00
9.14	116.00	243.84	180.00
9.14	122.00	384.88	110.00
12.19	157.00	426.72	120.00
16.29	228.00	394.88	98.00
24.38	300.00	426.72	100.00
30.48	363.00	609.88	190.00
42.67	485.00	914.48	85.00
30.48	410.00	914.48	90.00
42.67	540.00	1219.28	93.00
60.96	1828.88	1828.88	100.00
91.44	930.00	2438.48	100.00
121.92	510.00	3048.00	100.00

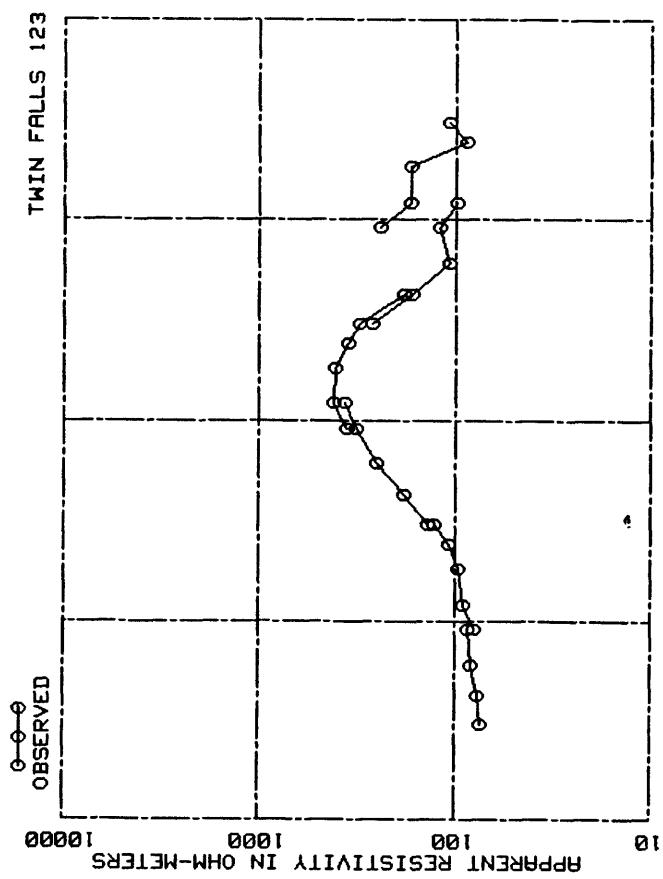


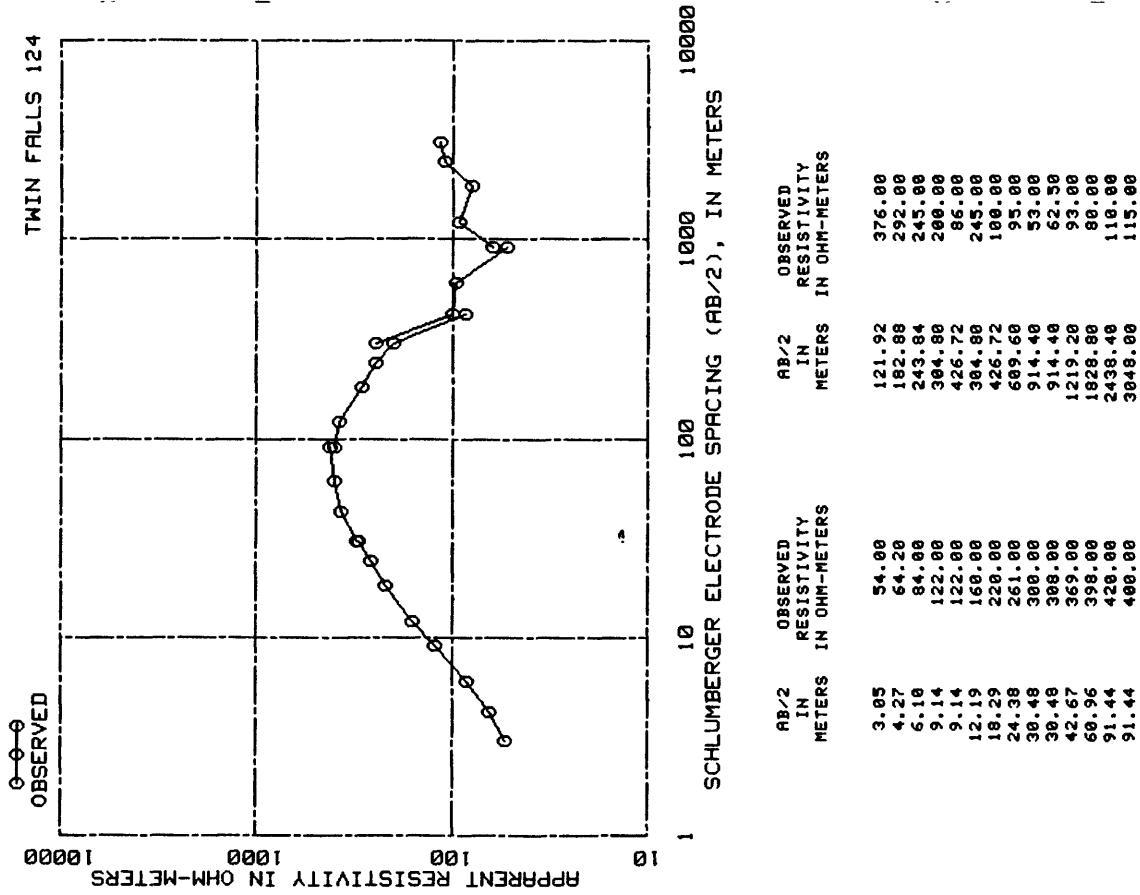
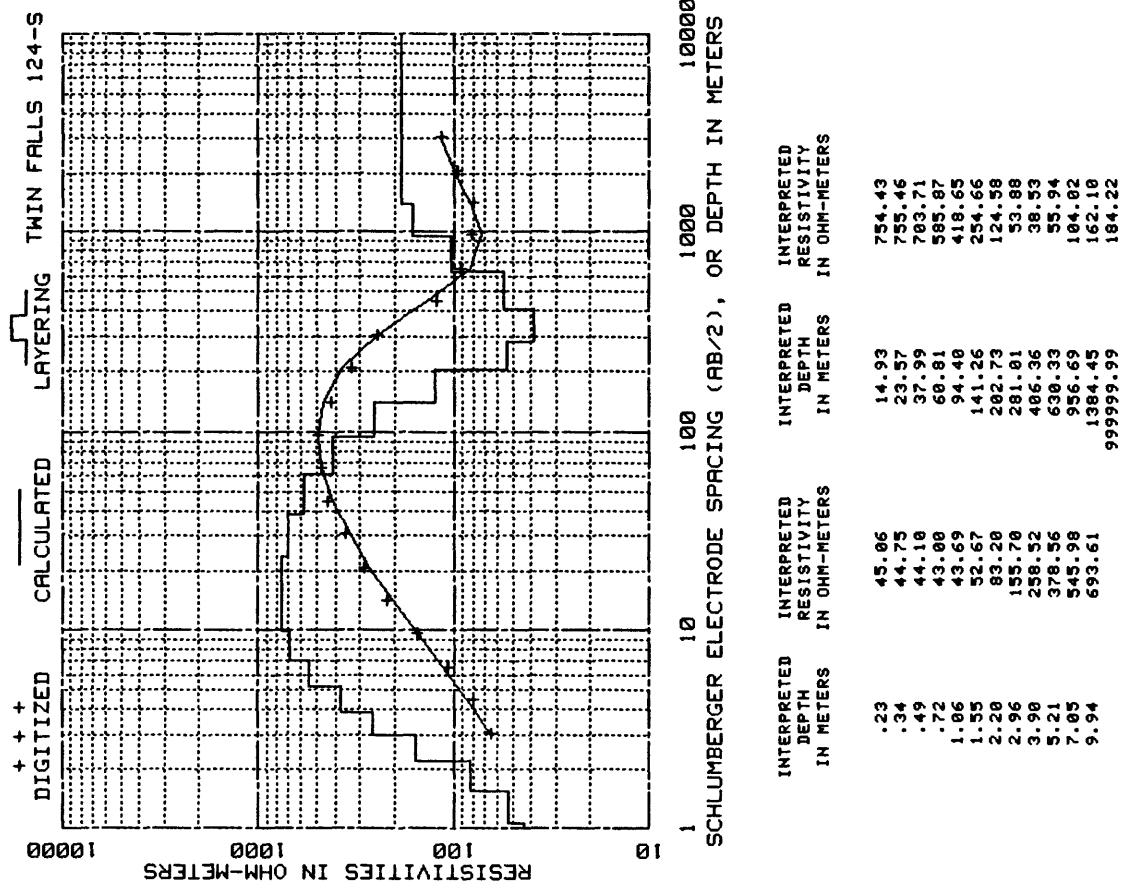




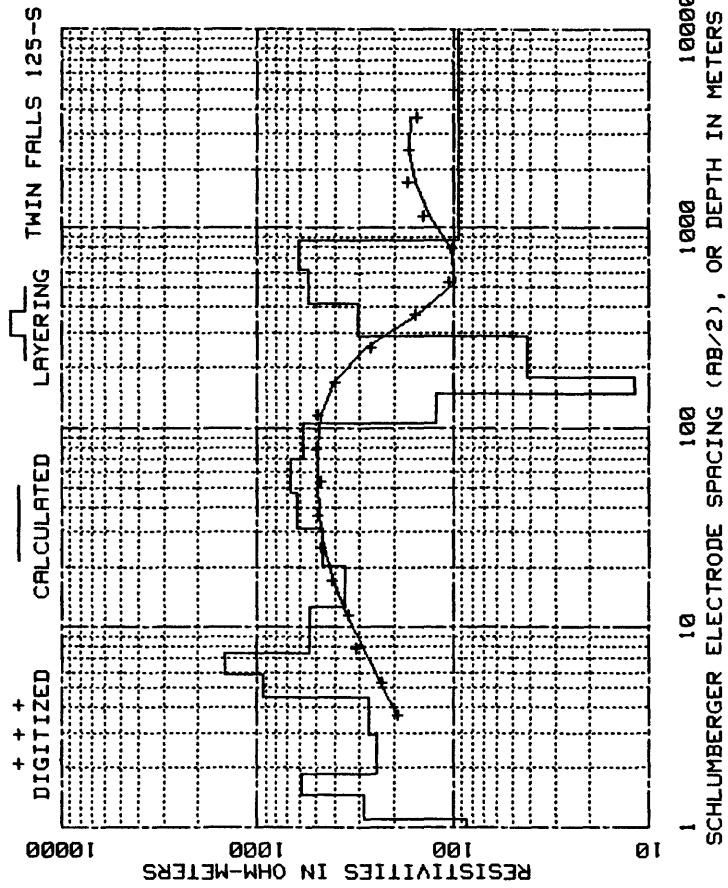
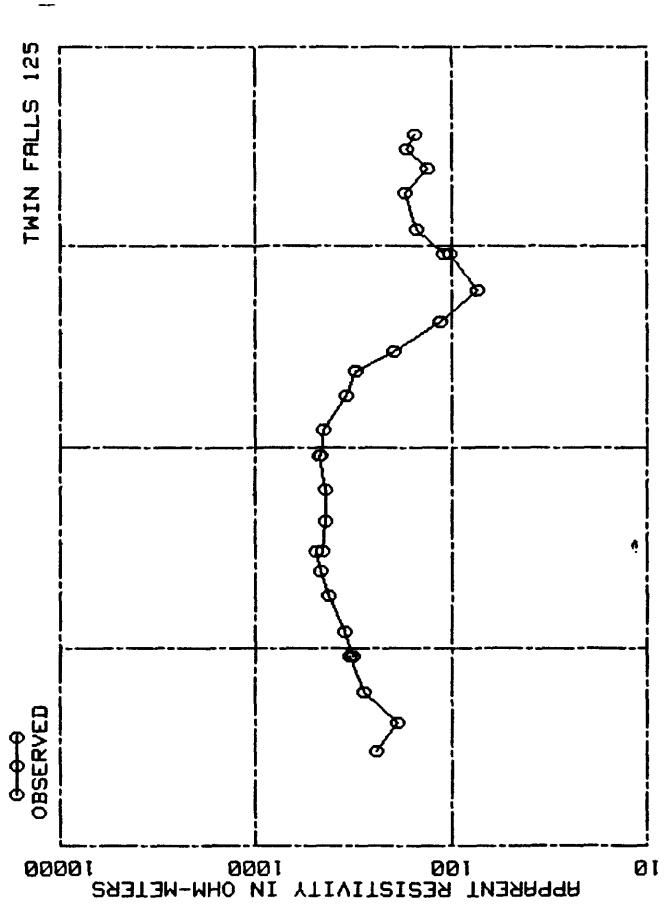
1 10 100 1000 10000
SCHLUMBERGER ELECTRODE SPACING (AB/2), OR DEPTH IN METERS

AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS	AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
3.05	74.00	121.92	415.00	.14	126.95	12.17	239.49
4.27	77.00	182.00	416.00	.20	116.20	17.67	578.93
6.10	82.00	243.84	348.00	.29	103.79	25.63	1074.98
9.14	85.00	308.00	387.00	.43	114.76	37.83	1493.75
9.14	80.00	426.72	180.00	.62	142.02	51.78	2155.24
12.19	90.00	384.88	265.00	.92	139.38	81.01	1651.98
16.29	95.00	422.72	164.00	1.35	189.51	116.95	378.84
24.38	108.00	609.60	197.00	1.98	111.55	156.53	91.39
38.48	127.00	914.40	120.00	2.81	210.58	227.00	76.64
38.48	137.00	1219.20	97.00	3.89	322.92	325.78	516.87
42.67	180.00	914.40	248.00	5.85	119.90	525.30	271.84
60.96	250.00	1219.20	167.00	6.55	69.48	723.25	44.07
91.44	322.00	1828.80	167.00				
121.92	363.00	2438.40	87.00				
91.44	360.00	3048.00	107.00				





	AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS	AB/2 IN METERS	OBSERVED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS
3.05	54.00	121.92	376.00	376.00	.23	45.06	14.93	754.43
4.27	64.20	182.88	292.00	292.00	.34	44.75	23.57	755.46
6.10	84.00	243.84	245.00	245.00	.49	44.16	31.99	783.71
9.14	122.00	300.80	200.00	200.00	.72	43.00	60.81	585.87
9.14	122.00	426.72	86.00	86.00	1.06	43.69	94.40	418.65
12.19	160.00	384.88	245.00	245.00	1.55	52.67	141.26	254.66
18.29	220.00	422.72	100.00	100.00	2.20	83.20	202.73	124.58
24.38	261.00	609.60	95.00	95.00	2.96	155.10	28.01	53.88
30.48	300.00	914.40	53.00	53.00	3.90	258.52	486.36	38.53
30.48	300.00	914.40	62.50	62.50	5.21	378.56	630.33	55.94
42.67	369.00	1219.20	93.00	93.00	7.05	545.98	956.69	104.02
60.96	398.00	1822.80	80.00	80.00	9.94	693.61	1384.45	162.10
91.44	428.00	2438.40	110.00	110.00				184.22
91.44	400.00	3048.00	115.00	115.00				



SCHLUMBERGER ELECTRODE SPACING (AB/2), OR DEPTH IN METERS	INTERPRETED DEPTH IN METERS	INTERPRETED RESISTIVITY IN OHM-METERS	INTERPRETED RESISTIVITY IN OHM-METERS
3.05	1.16	122.68	122.57
4.27	2.24	118.09	118.12
6.18	3.35	136.37	136.24
9.14	4.51	141.76	146.91
9.14	4.75	88.38	623.57
12.19	1.18	83.72	78.95
18.29	1.47	287.35	108.21
24.38	1.85	589.94	586.39
30.48	2.94	249.83	147.29
42.67	4.54	268.67	122.19
60.96	5.81	922.77	464.35
91.44	7.49	1462.66	359.97
91.44	9.42	99999.99	359.42

